BLUEPRINT Geospatial Landscape of the United Nations system

UN GEOSPATIAL NETWORK
UNITED NATIONS COMMITTEE OF EXPERTS ON GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

Covering just 800 square meters, Egg Island is a tiny uninhabited patch at the northwest end of the long chain of islands that form the Eleuthera archipelago, about 70 km from Nassau, Bahamas.

Its name perhaps originates from the seabird eggs collected here.

The image, which Sentinel-2B captured on 2 February 2018, shows the sharp contrast between the beautiful shallow turquoise waters to the southwest and the deeper darker Atlantic waters to the northeast.

Ripples of sand waves created by currents stand out in the shallow waters. These shallow waters are a natural nursery for sea turtles and other sea life.

Any disturbance to this delicate ecosystem could spell disaster for wildlife. In fact, Egg Island was recently at risk of being developed as a cruise ship port, which would have meant dredging the seabed and destroying coral reefs. Fortunately, this plan didn't take hold because of the damage it would cause to the environment.

Credits: Copernicus Sentinel (2018), processed by European Space Agency

FOREWORD

This is a time of change. Humanity is facing significant societal challenges. We have just started a *decade for action a*nd will be striving to achieve Agenda 2030 and the Sustainable Development Goals (SDGs).

This decade has started with uncertainty and complexity, originating from the global COVID-19 pandemic which is affecting all societies to an unprecedented extent. This humanitarian crisis is expected to disproportionately impact the most fragile populations from developing countries – poorer social classes, women and children, older generations, and those affected by conflict, or living in fragile settlements or poorly-equipped medical areas. More importantly, this pandemic has reminded us all of our interconnectedness – our global societies, economies and environments – and that a local phenomenon can rapidly impact the whole of humankind. More than ever, we must act as One Planet to address global challenges using a coherent and collaborative approach, and to be more resilient. Wars and conflicts, disasters, water scarcity, climate change and pollution, diseases and poverty, crimes and inequalities all have global consequences, spill over effects, that affect all regions of the world, impacting us all. We must be better prepared for our future, respond to emergencies with more effectiveness, and recover from disasters *building back better*. We are all in this together and need to find innovative ways to fight this complex phenomenon and *Leave No One Behind*.

The global geospatial community can play a critical role in leveraging our understanding of mega-trends and global phenomena through innovative technology, data and analysis. Geospatial information provides insights, models and knowledge to understand patterns, trends and events as well as build scenarios, and act upon them- the "Data for Action" approach. Geospatial information contributes to data-driven and evidence-based decision making to support local, national, regional, and global development and emergency priorities and agendas. The United Nations is using geospatial information for the delivery of its mandates in the Peace, Development and Humanitarian nexus, and must work to create synergies with all governments, academia, private sector, societies, innovators and civil society at large. This will be of fundamental importance in building a "geospatial way for a better world", impacting People, Places and our Planet.

Following the agreed Work Plan of the United Nations Geospatial Network of the Committee of Experts on Global Geospatial Information Management (UN-GGIM) for 2019–2021, this "Blueprint: Geospatial Landscape of the United Nations system" aims to provide an overview: it is a concise and dynamic resource of current geospatial mandates, activities, personnel, data usage, infrastructure and resources across the whole United Nations system. It is our responsibility to further document and raise awareness of these activities and keep this resource up to date.

We hope this exercise will promote transparency and enable further partnerships and synergies within our vibrant geospatial community

Alexandre Caldas
Chair of the United Nations Geospatial Network

MEMBERS OF THE NETWORK

TABLE OF CONTENT

A view of the Secretariat Building, with Members States' flags flying in the foreground, at United Nations headquarters in New York, taken on 23 February 2017.

Credits: UN Photo/Rick Bajornas (2017)

SECRETARIAT

"The Secretariat, one of the main organs of the UN, is organized along departmental lines, with each department or office having a distinct area of action and responsibility. Offices and departments coordinate with each other to ensure cohesion as they carry out the day-to-day work of the Organization in offices and duty stations around the world. At the head of the United Nations Secretariat is the Secretary-General."

Department for Economic and Social Affairs (DESA)

Statistics Division*

Geospatial Activities

The United Nations Statistics Division (UNSD), one of the ten divisions of the Department of Economic and Social Affairs (DESA), is the central body for statistical and geospatial activities in the United Nations. UNSD has Secretariat responsibility of three **inter-governmental, subsidiary bodies of the United Nations Economic and Social Council** (ECOSOC):

- the United Nations Statistical Commission;
- the **Committee of Experts on Global Geospatial Information Management (UN-GGIM)**; and,
- the United Nations Group of Experts on Geographical Names (UNGEGN).

The Statistical Commission is the apex entity of the global statistical system. It is the highest decision-making body for international statistical activities, including the setting of statistical standards and norms, measuring progress on the implementation of the SDGs, the development of concepts and methods, and their implementation at the national and international level.

UN-GGIM is the apex intergovernmental mechanism for making joint decisions and setting directions on the production, availability and use of geospatial information within national, regional and global policy frameworks, and to develop effective strategies for building and strengthening geospatial information capacity, especially of developing countries. UN-GGIM supports countries to have access not only to more comprehensive and accurate data, but also to make their information systems more integrated, interoperable and accessible to support national to global development.

UNGEGN is responsible for encouraging the standardization of geographical names and promoting the national and international benefits of standardization.

Geospatial Data

Activities relating to the collation and dissemination of geospatial data are detailed within the website of UNSD (https://unstats.un.org), including the:

- Federated Information System for the Sustainable Development Goals (FIS4SDGs), built in partnership with Esri. The FIS4SDGs leverages state-of-the-art web technologies and services to improve the integration, accessibility and usability of official statistics, geospatial information, and other sources of data, including from outside the official statistical system, to support decision makers at the local, national, regional and global levels in achieving the 2030 Agenda. It is a hub of global SDG data, enabling data access through open, web-based geospatial standards; and,
- World Geographical Names Database, managed and maintained by UNGEGN.

Geospatial Usage

As the Secretariat for UN-GGIM, UNSD provides a forum for Member States to make joint decisions and set direction with regard to the production, availability and application of geospatial information within national, regional and global policy frameworks. This work helps address global challenges regarding the use of geospatial information, including in the development agendas, such as the 2030 Agenda. Key geospatial policy, coordination and capacity building frameworks and outputs developed by UN-GGIM with the Secretariat support of UNSD include the:

- Integrated Geospatial Information Framework, as a basis and guide for developing, integrating, strengthening and maximizing geospatial information management and related resources in all countries;
- Global Statistical Geospatial Framework, through the application of its five principles and key supporting

*designated Secretariat office to the Secretariat to the Committee of Experts on Global Geospatial Information Management pursuant to Resolution E/2011/24 and as Secretariat to the Network E/C.20/2018/18/Add.1.

elements is a high-level framework which facilitates the consistent integration and production of geospatially enabled statistical information;

- Framework for Effective Land Administration, acts as an overarching policy guide, provides a reference for Member States when developing, renewing, reforming, strengthening or modernizing land administration and management systems;
- Strategic Framework on Geospatial Information and Services for Disasters as a guide for Member States in their respective national activities to ensure the availability and accessibility of quality geospatial information and services across all phases of the emergency cycle;
- Global Fundamental Geospatial Data Themes, a set of 14 themes considered fundamental to strengthening a country's geospatial information infrastructure;
- Global Geodetic Reference Frame for Sustainable Development, resolution of the General Assembly (A/RES/69/266); and
- Future Trends in Geospatial Information Management (the five to ten-year vision)

Geospatial Resources

UNSD has a dedicated "Global Geospatial Information Management Section" which consists of four professional and one general service staff.

Geospatial Representatives

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Relevant links

- http://ggim.un.org
- https://unstats.un.org/home/
- http://data.un.org
- https://unstats.un.org/unsd/ungegn

Office for the Coordination of Humanitarian Affairs (OCHA)

Geospatial Activities

OCHA is the part of the United Nations Secretariat responsible for bringing together humanitarian actors to ensure a coherent response to emergencies. OCHA also ensures there is a framework within which each actor can contribute to the overall response effort.

OCHA's mission is to:

- Mobilize and coordinate effective and principled humanitarian action in partnership with national and international actors in order to alleviate human suffering in disasters and emergencies
- Advocate the rights of people in need
- Promote preparedness and prevention
- Facilitate sustainable solutions

Most of OCHA's GIS activities are carried out in the field by Information Management Officers (IMOs). OCHA has approximately 160 IMOs worldwide, but because of the broad range of information activities that these staff are responsible for, few are dedicated full-time to GIS.

In Headquarters, OCHA has four sections that deal with geospatial data:

- Field Information Services Section (FIS): based in Geneva, provides support to field officers on all information management issues, including GIS, and oversees inter-agency work on the 'common operational datasets', which include spatial data such as administrative boundaries and related statistical data such as population statistics.
- Visual Information Unit (VIU): collects, processes and stores data to produce maps that support global advocacy and situation awareness. The unit establishes mapping standards for OCHA by developing templates and guidelines and by providing training. Increasingly, interactive mapping is used when developing microsites on specific emergencies/themes.
- Need and Response Analysis Section (NARAS): works within the Programme Support Branch in Geneva to provide support on coordinated humanitarian needs assessment. This work involves both normative work at the global level, and technical support directly to country operations.
- Humanitarian Data Centre: provides the Humanitarian Data Exchange (HDX) platform, including interactive mapping.

OCHA's role in information management, including GIS, is largely derived from GA Resolution 46/182, as well as a range of IASC guidance.

Geospatial Data

In field offices:

- Maintenance of 'common operational datasets' (CODs) and other geospatial data in countries with ongoing operations or at high-risk of future emergencies
- Analysis, including of geospatial data, as part of preparedness, needs assessment, strategic planning, implementing and monitoring
- Production of information products including reference maps, operational maps, infographics, situation reports and programme documents
- Distribution of geospatial data, maps and related products through platforms such as HDX, ReliefWeb and HumanitarianResponse.info

OCHA

- Coordination of humanitarian agencies through the local Information Management Working Group, including on the use of geospatial data and data standards
- Activation and use of the International Charter: Space and Disasters

In HQs:

- Development of inter-agency guidance and standards for CODs
- Collection, review and cleaning of administrative boundary and population statistics CODs for preparedness countries
- Remote support for field offices in all aspects of information management, including GIS and geospatial data
- Training of OCHA field staff on geospatial data and related products and services

Geospatial Usage

Geospatial analysis of humanitarian response including locations and movement of populations in need, location of response actors, overall humanitarian situation, and risk mapping.

Geospatial Resources

FIS has one full-time staff member working on geospatial data.

NARAS employs one Information Management Officer, who employs GIS methods as required (mapping severity of humanitarian needs, GIS analysis on a population's exposure to natural disasters, et cetera). It is not a dedicated GIS position.

In the field, OCHA has approximately 80 staff who work with geospatial data to varying extents.

HDX has a focal point for geodata issues pertaining to HDX. This person also supports FIS with the CODs. Approximately 20 per cent of this position's overall work is spent on HDX.

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Relevant links

Geospatial data available at:

- www.humdata.org

Products available at:

- www.reliefweb.int
- www.humanitarianresponse.info

Office of Information and Communications Technology (OICT)

Geospatial Information Section*

Geospatial Activities

The vision of United Nations Geospatial services of the Secretariat, led by the Geospatial Information Section at Heaquarters, is the United Nations for a better world. Further, their mission aims to mainstream the use of geospatial information across the United Nations Secretariat for unified, integrated, and accessible information, analysis, and visualisation for evidence-based decision-making and action in support of peace and security, human rights, international law, development, and humanitarian aid.

The mission to mainstream of geospatial information and innovation to enable transformation of the support the mandates of the United Nations is conducted through four main goals as follows:

- Strengthen core global geospatial policy, framework, data, tools and services across the Organization
- Enhance geospatial information benefits to the mandates, decision-making and operations
- Increase capacity, expertise and integrated geospatial systems across the Organization
- Raise awareness on geospatial information and harness international partnerships

Specific activities include:

1. Providing cartographic and geospatial information services to the Security Council and senior management of the United Nations.
2. Provide **Secretariat services to the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM)**, with the Statistic Division of the Department of Economic and Social Affairs (DESA), established under resolution 2011/24 by the Economic and Social Council.
3. Providing map clearance and permissions following the "Guidelines for the Publication of Maps" as set forth in ST/AI/189/Add.25/Rev.1 to ensure that maps meet publication standards and that they are not in contravention of existing United Nations policies prior to their issuance including dissemination via public electronic networks such as Internet.
4. Supporting field operations through the provision of accurate and timely geospatial information and terrain analysis in support of decision making and operational needs.
5. Producing planning and operational maps and geospatial data to meet the needs of field operations.
6. Providing oversight of and coordinating activities with the geospatial information sections and units of UN field missions including UN Global Service Centre (UNGSC) in Brindisi, Italy and UN Regional Service Centre (UNRSC) in Entebbe.
7. Providing technical assistance related to international boundary demarcation processes brought to the attention of the Secretary-General by Member States in the context of peace building and conflict prevention activities.
8. Manage the Second Administrative Level Boundaries (SALB) programme, in cooperation with the Statistics Division, which aims at compiling authoritative administrative boundaries from National Geospatial Information Authorities.
9. As part of the overall responsibilities, the geospatial services at the Global Service Centre are key to providing standardized and centralized support to the United Nations Secretariat and its field operations.

*designated Secretariat office to the Secretariat to the Committee of Experts on Global Geospatial Information Management pursuant to Resolution E/2011/24 and as Secretariat to the Network E/C.20/2018/18/Add.1.

Geospatial Information Section
OICT

Geospatial Data

Geospatial information Section services include general geospatial information (base map) and thematic geospatial information as well as a wide range of satellite imagery to offices/departments and UN field missions of the Secretariat, and upon request to agencies, funds and programmes. Its SALB programme also collects administrative boundaries worldwide. The Section maintains small scale of geospatial data for global coverage and large scale topographic mapping data, place names and satellite imagery as well as operational datasets for UN peace operations drawn from its own topographic mapping data, Member States' shared topographic mapping data (MGCP[1]) and/or OpenStreetMap.

Geospatial Usage

Geospatial data is used for a wide range of cartographic outputs, data and geospatial analysis and applications to link with enterprise systems or decision-support systems and aims to deliver corporate web-services (already available in some official websites)) in support of a wide range of UN operations at the Headquarters and in the UN field missions.

Software is currently mainly Esri technologies, although recently Open Source technologies are being incorporated to provide a hybrid solutions environment.

Geospatial support services include geospatial data management, image processing/interpretation/analysis, mapping support, advanced analytics, application development and data hosting.

Geospatial Resources

In Headquarters, New York (USA): 12 staff (7 Geospatial Information Officers, 2 Geospatial support staff, 1 seconded Geospatial Information Officer and 2 UNOPS Geospatial Information Officers)

At the UN Global Service Centre, Brindisi (Italy): 42 staff (11 Geospatial Information Officers, 14 Geospatial support staff, 17 consultants, including analysts, data experts, mapping specialists and developers).

In the peacekeeping and special political missions, there are around 100 geospatial staff (including officers, field, national staff and military geospatial officers through troop contribution by Member States).

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Relevant links

- http://www.un.org/gis
- http://www.ggim.un.org

1. MGCP : Multinational Geospatial Co-production Programme.

Office of Legal Affairs (OLA)

Geospatial Activities

The Division for Ocean Affairs and the Law of the Sea (DOALOS) of the Office of Legal Affairs (OLA) is mandated to carry out the responsibilities entrusted to the Secretary-General as contained in the 1982 United Nations Convention on the Law of the Sea (UNCLOS). OLA/DOALOS, supported by relevant General Assembly resolutions,[1] established a geographic information management (GIM) cluster to fulfil its responsibilities involving management, analysis and dissemination of geospatial information as per UNCLOS. The work programme of the GIM cluster includes:

- Maintenance of a geospatial information database established for the custody of charts and lists of geographical coordinates of points deposited by States under UNCLOS in relation to the limits of maritime zones, including lines of delimitation;
- Provision of geospatial services to the Commission on the Limits of the Continental Shelf (CLCS) as part of providing secretariat services in the context of the consideration by the CLCS of complex geological, geomorphological, geophysical and hydrographical data contained in the submissions of coastal States in accordance with article 76 of UNCLOS;
- Development and maintenance of a geoportal on maritime limits and boundaries intended to give due publicity, via the Internet, to the information deposited or otherwise provided by States;
- Assistance to the International Hydrographic Organization (IHO), as appropriate, with the initial implementation testing and evaluation of product specification for the structure of the deposited information to ensure its compatibility with geographic information systems, electronic nautical charts and other systems;
- Provision of geospatial information management and analysis to the bodies and/or States to which the Secretary-General offers assistance in the context of the peaceful settlement of disputes as well as to other parts of the United Nations system engaged in processes of maritime boundary delimitation; and
- Provision of cartographic briefing materials on law of the sea and ocean affairs- related matters, upon request by the offices of the Secretary-General, the Deputy Secretary-General, the United Nations Legal Counsel, the Assistant Secretary-General for Legal Affairs, and/or Office of the Spokesperson for the Secretary-General.

Geospatial Data

The GIM cluster maintains a geospatial database with the outer limits of maritime zones, including lines of delimitation, based on lists of geographical coordinates of points and nautical charts provided by States. The database is based on a product specification developed in cooperation with the International Hydrographic Organization (IHO). Further, the cluster manages geological, geomorphological, geophysical and hydrographical data contained in submissions made by coastal states to the CLCS. This data has also been augmented by those lines of delimitation contained in maritime boundary delimitation treaties registered with the Secretariat in accordance with article 102 of the Charter of the United Nations, as well as the outer limits of maritime zones, including lines of delimitation, which have otherwise been communicated by States to the Secretary-General.

1. GA resolutions 49/28 of 1994, 52/26 of 1997, 59/24 of 2004, 60/30 of 2005, 67/78 of 2012, 74/19 of 2019 and Secretary-General's bulletin ST/SGB/2008/13 paragraph 9.2

OLA

Geospatial Usage

The officially deposited geospatial data, and geospatial data obtained by other means is used for: (i) dissemination to Member States and the general public in the context of the due publicity of deposits by states of charts and geographical coordinates concerning maritime zones, including lines of delimitation and (ii) the preparation of cartographic outputs for the Senior Management of the Organization as well as bodies to which the Secretary-General offers assistance in the context of the peaceful settlement of disputes. Geospatial data submitted by coastal states to the CLCS is analysed by the CLCS in the preparation of recommendations to coastal states on matters related to the establishment of their outer limits of the continental shelf beyond 200 nautical miles from the baselines.

Geospatial Resources

The GIM cluster consists of four Geographic Information Systems Officer posts: one P-5 Senior; one P-4; two P-3; as well as two G-6 Geographic Information Systems Assistants.

A server, three high-end workstations and 21 PCs connected through a highly secured network provided and maintained by OICT, distributed in three GIS laboratories, constitute the DOALOS GIM infrastructure. The workstations and the PCs are upgraded following four-year cycles. The following software is deployed in the laboratories: ArcGIS, Geocap, CARIS BASE Editor, CARIS LOTS, Fledermaus, QGIS and Surfer. Funding for periodic software training is also made available. A wide-format scanner and plotter, a geospatial database and a related geoweb portal are part of the OLA/DOALOS/GIM infrastructure as well.

Geospatial Representatives

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Relevant links

- Handbook on the Delimitation of Maritime Boundaries, link
- Law of the Sea Bulletin, link

Websites:

- www.un.org/depts/los
- oceans.un.org

United Nations Office for Disaster Risk Reduction (UNDRR)

Geospatial Activities

The United Nations Office for Disaster Risk Reduction (UNDRR) is the United Nations focal point for disaster risk reduction, overseeing the implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030. UNDRR supports countries in the implementation, monitoring and sharing of risk reduction strategies to minimize existing risk and prevent the creation of new risk.

Geospatial information is key to the implementation of the Sendai Framework as recognized by the United Nations General Assembly in 2019 in its resolution on Disaster Risk Reduction which included a paragraph which "… recognizes the endorsement by the Economic and Social Council on 2 July 2018 of the Strategic Framework on Geospatial Information and Services for Disasters, as a guide for Member States to ensure the availability and accessibility of quality geospatial information and services across all phases of disaster risk reduction and management, and which contributes to the implementation of the Sendai Framework".

UNDRR is strengthening disaster loss accounting globally to support country assessments of hazard risk, and also to ensure a country has in place a comprehensive and credible accounting system for recording and reporting disaster events. This builds on the support UNDRR has been providing to Member States for over 20 years in the implementation of national disaster loss accounting systems. Such systems support the countries' assessment of risk, provide essential information for the development of DRR strategies and investment decisions at the local and national levels, as well as facilitate the reporting on progress of the implementation of the Sendai Framework by ensuring countries have compiled the disaster loss data needed to report through the Sendai Framework Monitor, which countries use to report progress against the agreed global targets and indicators.

The "SFM Analytics" module of the online Sendai Framework Monitoring system gives open access to multiple forms of analysis of Member States' validated data.

Furthermore, as per the UN Statistical Commission's recommendation, UNDRR is working with UN Statistics Division and UN Regional Commissions on a global framework for disaster-related statistics that will help National Statistics Organizations make this an integral part of official statistics.

In addition, and in order to further support countries in developing and improving their disaster risk assessments, UNDRR is providing a secretariat function to the Global Risk Assessment Framework (GRAF), launched in 2019. In its next phase of operationalization, GRAF will pilot systemic risk assessment in various country contexts. One of the important data sources being considered in assessing systemic risk is geospatial and earth observation data, and discussions are ongoing with both UN-GGIM and GEO Secretariat to forge a strong partnership for the initiative.

UNDRR is currently developing the UN Global Assessment Report 2022 (GAR 2022), in close collaboration with UN-GGIM and GEO Secretariat. Geospatial and earth observation data will complement SDG-related statistical data provided by UN DESA and data coming out of the UNDRR managed Sendai Framework Monitor, to assess trends in disaster risk and losses, but also to identify synergies, interlinkages and trade-offs in simultaneously reaching the global goals and the Sendai Framework targets. With the support of geospatial and earth observation data, GAR 2022 will also assess positive impacts that risk reduction has had on other major global agendas.

UNDRR

Geospatial Data

UNDRR supports Member States in the development of disaster loss databases and is custodian to the disaster loss data reported through the Sendai Framework Monitor. These data can be accessed publicly through the Analytics Module of the Sendai Framework Monitor.

Geospatial Resources

UNDRR provides direct support to Member States through its five regional offices in areas which include development and maintenance of disaster loss databases, monitoring progress in the implementation of the Sendai Framework for Disaster Risk Reduction and the development of national and local risk reduction assessments.

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- Carlos Augusto Uribe Perez, carlos.uribe@un.org

Relevant links

- Information on UNDRR www.undrr.org
- Information on the Sendai Framework Monitor https://sendaimonitor.undrr.org/

United Nations Department of Safety and Security (UNDSS)

Geospatial Activities

The Department of Safety and Security (UNDSS) of the UN Secretariat is responsible for providing leadership, operational support and oversight to the United Nations Security Management System (UNSMS). Its mission is to enable United Nations system operations through trusted security solutions and leadership.

UNDSS security personnel utilize geographic information systems (GIS) to provide security services to UNSMS personnel and security decision-makers. GIS information and visualisation tools are limited to the support of security risk analysis and are increasingly used to enhance security awareness of personnel operating in field locations through notifications and support in emergencies.

Geospatial Data

- UN safety and security incidents
- Location-based security notifications
- Open-source security incidents or armed conflict data

Geospatial Usage

The mapping capabilities bring visualization enhancements to analytical outputs and support operational awareness.

Geospatial Resources

The Office for Information, Communications Technology (OICT) manages GIS systems for the Department of Safety and Security.

UNDSS

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Relevant links

- UNDSS website: https://www.un.org/undss/

United Nations Office on Drugs and Crime (UNODC)

Geospatial Activities

The United Nations Office on Drugs and Crime (UNODC) is a global leader in the fight against illicit drugs and international crime and is mandated to assist Member States in their struggle against illicit drugs, crime and terrorism. In the Millennium Declaration, States also resolved to intensify efforts to fight transnational crime in all its dimensions, to redouble the efforts to implement the commitment to counter the world drug problem and to take concerted action against international terrorism. UNODC bases its work on three pillars: research and analytical normative work to assist States in the ratification and implementation of international treaties; the development of domestic legislation on drugs, crime and terrorism; and field-based technical cooperation projects.

The Research and Trend Analysis Branch (RAB) of UNODC produces a variety of studies on indicators related to drugs and crime (e.g. prevalence of drug use, corruption, homicides, seizures of firearms), using thematic maps for the dissemination of the results. The main annual publication of RAB is the World Drug Report, which also includes thematic maps. The Afghan Opiate Trade Project (AOTP) reports include maps of trafficking routes and major seizure locations. The Drugs Monitoring Platform (DMP) uses web map services to display drug seizure related data.

The Illicit Crop Monitoring Programme (ICMP) establishes methodologies for data collection and analysis to increase governments' capacities to monitor the extent and evolution of illicit crops – coca, opium and cannabis. The ICMP makes effective use of satellite imagery and geospatial analysis in all its crops monitoring surveys. Besides the satellite imagery, other geospatial data are exploited to support monitoring, mostly as ground-truth data. Results are presented in the annual survey reports published online.

Geospatial Data

- Commercially available and open-source satellite imagery
- Other remotely-sensed datasets (aerial photography, videos etc.)
- Ground-truth global positioning system (GPS) data and geo-tagged photos collected in the field
- Main geospatial data of illicit crop interpretations
- Auxiliary geospatial data (such as sampling frames, potential agricultural areas, risk maps, etc.)
- Thematic maps and other visualizations, usually embedded in the reports and publications
- Web map services

Geospatial Usage

The ICMP exploits hundreds of satellite images every year for estimating crops under cultivation and produces maps and other visualizations that show the distribution of the cultivations and other related themes (land use, socio-economic indicators, etc.). Satellite imagery is exploited at different spatial (low, medium, high and very-high) and spectral resolutions (visible light, near-infrared, etc.). For the delineation of the crop cultivations, mainly high to VHR imagery (e.g. Pleiades, WorldView) is used. Medium to low-resolution imagery (e.g. Landsat, Sentinels) is used to define sampling frames (e.g. through land cover and risk maps) and to extract information on periodicity of the crops.

Satellite imagery and geospatial data are exploited to produce cultivation estimates and to conduct change detection compared to previous years. The geospatial data stores and maintains annual/intra-annual crop interpretations and other auxiliary information. Ground-truth data are collected in the field for validation and quality

control purposes. The ICMP data are mostly exploited in the Field Offices (FOs) where the main interpretation, analysis and visualization tasks are conducted, whereas the RAB at headquarters is responsible for quality control/assurance and coordination of geospatial projects. Headquarters also produces a variety of maps on other projects and publications.

Geospatial Resources

Approximately 50 GIS/Remote Sensing staff, mostly based in the field offices, working on ICMP and other geospatial projects.

Mainly ESRI, but ERDAS, PCI, and open-source (e.g. QGIS) software are also used.

Geospatial Representatives

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Relevant links

- https://www.unodc.org/
- https://www.unodc.org/unodc/en/crop-monitoring/
- http://www.unodc.org/wdr2019/

United Nations Office for Outer Space Affairs (UNOOSA)

Geospatial Activities

The United Nations Office for Outer Space Affairs (UNOOSA) promotes international cooperation in the peaceful use and exploration of space, and the utilisation of space science and technology for sustainable economic and social development. The Office assists United Nations Member States to establish legal and regulatory frameworks to govern space activities and strengthens the capacity of developing countries to use space science technology and applications for development by helping to integrate space capabilities into national development programmes.

Through the United Nations Programme on Space Applications, UNOOSA conducts international workshops, training courses and pilot projects on topics that include remote sensing, satellite navigation, satellite meteorology, tele-education and basic space sciences for the benefit of developing nations.

The International Committee on Global Navigation Satellite Systems (ICG) facilitates compatibility, interoperability and transparency between all the satellite navigation systems, to promote and protect the use of their open service applications and thereby benefit the global community.

UN-Space convenes annual sessions of the Inter-Agency Meeting on Outer Space Activities to discuss space-related matters among UN system entities. UN-Space organizes informal sessions that are open to Member States, private sector, non-governmental institutions and academia.

UNOOSA is also the United Nations focal point for satellite imagery requests during disasters and manages the United Nations Platform for Space-based Information for Disaster Management and Emergency Response (UN-SPIDER), established in 2006. The programme has the mandate to "Ensure that all countries and international and regional organizations have access to and develop the capacity to use all types of space-based information to support the full disaster management cycle".

Geospatial Data

UNOOSA uses and promotes the use of free earth observations data but is also signatory of memorandum of understandings (MoUs) with providers of (geospatial) earth observation data like Airbus, DigitalGlobe/MAXAR, China National Space Administration, and others in development. The satellite imagery is used for the monitoring of the Sustainable Development Goals (SDGs), disaster risk reduction and monitoring impacts of climate change. The office has access to additional EO data and products through various mechanisms: as an authorised user, UNOOSA can trigger the International Charter 'Space and Major Disasters' on request of government agencies; UNOOSA is a Joint Project Team member of the Sentinel Asia and user of the Copernicus EMS; it is also an active member of International Working Group on Satellite-based Emergency Mapping (IWG-SEM) (http://www.un-spider.org/network/iwg-sem).

UNOOSA

Geospatial Usage

Geospatial data are used for disaster management and sustainable development purposes. UNOOSA promotes the use of geospatial data and tools through dedicated knowledge portals, like the UN-SPIDER portal (http://www.un-spider.org/), workshops and training sessions, mostly organized in countries of need. UN-SPIDER has a series of documented recommended practices that are available to practice step-by-step with satellite data in open source GIS software. UNOOSA connects data providers with data users and participates in Group on Earth Observations (GEO) and Committee on Earth Observation Satellites (CEOS) events.

Geospatial Resources

UNOOSA has two remote sensing/GIS professional staff and a pool of interns/visiting scientists that work on geospatial information and remote sensing applications. Furthermore, UNOOSA has a network of six Regional Centres for Space, Science and Technology Education and an expanding network of 23 Regional Support Offices (RSO) for UN-SPIDER. The RSOs have a large number of experts in geospatial information and remote sensing and work with earth observation data (space agencies, research centres, universities or disaster management institutions) and use their expertise to assist countries in the use of data for emergency response and disaster management. The experts from the RSOs assist at training workshops, provide training material and provide maps and data analysis at all stages of the disaster management cycle.

Geospatial Representatives

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Relevant links

- www.unoosa.org
- http://www.un-spider.org/links-and-resources/data-sources
- www.un-spider.org
- http://www.un-spider.org/links-and-resources/gis-rs-software

The Asia and the Pacific region is home to 4.1 billion people, or two thirds of the world's population.

This photograph was taken early in the morning, when farmers go to paddy fields, in Maos village, central Java, Indonesia.

Credits: UN Photo/Ali Mustofa (2013)

REGIONAL COMMISSIONS

"The Regional Commissions are the regional outposts of the United Nations and represent an integral part of the regional institutional landscape and of the Secretariat. Stationed in five regions of the world, Africa, Asia and the Pacific, Europe, Latin America and the Caribbean, and Western Asia. The regional commissions share the key objectives of aiming to support regional and sub-regional sustainable development by contributing to bridging economic, social and environment gaps, through the Sustainable Development Goals, among their member countries"

Economic Commission for Africa (ECA)

Geospatial Activities

The United Nations Economic Commission for Africa's (ECA) current scope of work in geospatial information is in line with its position to support regional priorities and initiatives. The objective is to encourage and continually increase the use of geospatial resources (data, information, services) in decision making processes for sustainable development, economic growth, resource exploitation, environmental protection and management and social progress. ECA also aims to make appropriate geospatial data and information available and easily accessible to the entire community of users.

Geospatial information is central to ECA research and policy analysis work in:

- Harnessing and building purpose-oriented geospatial information resources including spatial data, common standards, applications and services to support regional initiatives and improve availability and use of spatially enabled data for informed decision making for Africa's development agenda.
- Supporting the implementation, tracking and monitoring of the SDGs, from which more than two-thirds of indicators require geospatial datasets (such as remote sensing and earth observation data) that may constitute the basis for evidence-based decision making, monitoring and accountability.
- Assisting Member States, sub-regional and regional institutions, in focusing on the development and implementation of spatial data infrastructures as the appropriate mechanism for the production, management, dissemination and use of spatial data and information products at regional and national levels.
- Fostering the linkage between statistics and geospatial information through mainstreaming the enabling capabilities of geospatial technology into National Statistics Offices' activities (all the way through training, data and processes); providing the basic framework for supporting census logistics, designing, maintaining and manipulating censuses and surveys; and revisiting National Spatial Data Infrastructure (NSDIs).
- Providing technical support to other ECA entities for: the incorporation of geospatial information management and earth observations and other geoinformation solutions and tools; and in the analysis and presentation of socio-economic data to facilitate ECA research and policy analysis work.
- Advancing holistic geospatial information policies that enable and encourage linkages with international programmes and initiatives, including the United Nations Global Geospatial Information Management (UN-GGIM).

Geospatial Data

To make geospatial information readily available and easily accessible, ECA promotes increased investments in the production of geospatial databases and the building of fundamental core and thematic datasets. These datasets should be established at regional and national levels to provide:

- Repository of satellite data at different resolutions (low to very high)
- Fundamental datasets in Africa
- Primary topographic and thematic datasets for targeted economic sectors including: agriculture, climate change, water resources management and natural disasters and others regional challenges.

ECA

Geospatial Usage

The demand for geospatial information is increasing at an unpreceded rate. At ECA, geospatial information is essential to:

1. Maintain its role in supporting Member States in strengthening their geospatial capacities and to remain the anchor for the regional intergovernmental proceedings. In Africa, no other institution provides such a regional focus.
2. Keep abreast of global trends throughout the UN: as with Headquarters and other Regional Commissions, ECA places a similar emphasis on GIS issues.
3. Sustain the momentum in providing support to ECA's constituencies. The Geospatial Information Section works to develop effective geospatial capacity in African countries and to promote the use of that information to meet key global challenges.
4. Ensure coherent, consistent geospatial methods and tools. To attain optimum results, geospatial information must be reliable and consistent, and compatible with upgraded datasets. The Geospatial Information Section ensures that interoperable geospatial information complies with common frameworks and standards which are adopted at every level.

The Geospatial Information Management section provides fit-for-purpose support to ECA policy work, by adding value in terms of analysis and presentation of socio-economic data to facilitate the Commission's research and policy analysis work. Support has been provided to nearly all ECA sub-programmes, sub-regional offices and other entities for evidence-based planning and spatial analysis; map production and presentation; data processing, capacity development, etc.

Geospatial Resources

The Geospatial Information Management section (GIMS) is staffed by one Senior GIS Officer, three GIS Officers and four GIS Assistants. GiMS develops solutions and applications in-house for ECA users and partners in regional organizations.

The Section uses ArcGIS suite, version 10.7, that is comprised of ArcGIS Enterprise Server and several desktop and online modules.

Geospatial Representatives

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Relevant links

- www.uneca.org

The future orientation of geoinformation activities in Africa

- http://repository.uneca.org/handle/10855/843?show=full

SDI Africa: An Implementation Guide

- http://geoinfo.uneca.org/sdiafrica/default1.htm

Determination of the Fundamental Geospatial Datasets for Africa

- www.uneca.org/sites/default/files/PublicationFiles/geoinformation_socio_economic_dev-en.pdf

ECA Country Profiles

- www.uneca.org/publications/country-profiles

Economic Commission for Europe (ECE)

Geospatial Activities

The United Nations Economic Commission for Europe (ECE) is one of five UN regional commissions, covering 56 member countries in Europe, North America and Central Asia. It has no specific geospatial programme, but the Regional Adviser on Statistics has been designated the UNECE focal point for geospatial information. The increasing links between geospatial and statistical information are evident in several parts of UNECE's statistical programme, including topics such as statistics for the SDGs, population and housing censuses, statistics on disasters, data integration and machine learning.

ECE also has a Committee on Urban Development, Housing and Land Management, which focuses on policy aspects in this area, and a Working Party on Land Administration, which works to improve land administration and management through activities based on cooperation and the exchange of experiences between countries.

In 2017, ECE and UN-GGIM: Europe concluded an agreement[1] for greater collaboration on geospatial information management, which was endorsed at the political level by the UNECE Executive Committee (ambassadors of UNECE member States). This agreement highlighted strategic areas for collaboration, including geospatial information for sustainable development, building networks and promoting communication, integration of geospatial, statistical and other information, and capacity development.

ECE and UN-GGIM: Europe organise various events to support the priorities identified in the agreement, often in partnership with others, such as Eurostat and the European Free Trade Association (EFTA). These include annual ECE / Eurostat / UN-GGIM: Europe meetings on integrating statistical and geospatial information, and ad-hoc workshops on topics such as geospatial and statistical standards, strategic partnerships and data integration. ECE also partners with the UN (DESA) Statistical Division for relevant activities in the ECE region, such as a workshop on implementing the Integrated Geospatial Information Framework.

ECE and UN-GGIM: Europe are also facilitating improved connections between national geospatial and statistical organizations by planning back-to-back plenary sessions of the Conference of European Statisticians and UN-GGIM: Europe, with a joint day on topics of mutual interest, to identify areas for future joint work.

ECE also engages with other relevant projects and organizations outside the United Nations system, and has recently concluded an agreement to be a participating organization in the Group for Earth Observations (GEO). The GEO secretariat has actively contributed to the development of ECE guidelines, in areas such as statistics on disasters.

1. http://www.unece.org/fileadmin/DAM/stats/documents/ece/ces/2018/CES_13_Eng_UN-GGIM.pdf

ECE

Geospatial Data

The ECE Statistical Database (https://w3.unece.org/PXWeb/en) holds data at the country level for the 56 ECE member States. It includes an option to show data via maps, using the "Leaflet" open-source JavaScript library for mobile-friendly interactive maps. A similar option, using the same technologies, is present in the ECE SDG Dashboard (https://w3.unece.org/sdg).

Geospatial Usage

ECE is not a user of geospatial information systems, other than the basic mapping packages used for dissemination of statistics (see above).

Geospatial Resources

ECE does not have any resources allocated to geospatial information management. Informally, the Regional Adviser in Statistics can spend up to 20 per cent of their time on this topic, including representing UNECE in the UN Geospatial Network.

Geospatial Representatives

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Relevant links

- https://w3.unece.org/PXWeb/en
- https://w3.unece.org/sdg

Economic Commission for Latin America and the Caribbean (ECLAC)

Geospatial Activities

A relevant geospatial milestone took place at the Thirty-Sixth Session of ECLAC in May 2016, with the approval of Resolution 712 on the regional integration of statistical and geospatial information, opening the space for dialogue between the Statistical Conference of the Americas of ECLAC and UN-GGIM: Americas, in order to coordinate efforts and define a joint agenda for the integration of statistical and geospatial information.

In July 2017, the geospatial component was introduced into the ECLAC Statistics Division, through the incorporation of a regional expert in geospatial information management, whose main function is to promote articulation between statistical and geospatial communities in the countries of the region, in accordance with the guidelines and resolutions of the UN-GGIM Committee of Experts and the Statistics Commission globally. ECLAC's Statistics Division carries out the following activities on a regular basis:

1. Technical assistance to countries that mainly focuses on the implementation of the Integrated Geospatial Information Framework (IGIF) and the Global Statistical Geospatial Framework (GSGF). Between 2018 and early 2020, 10 countries have been assisted (statistics, geospatial and other public agencies).
2. Statistical Geospatial Framework for the Americas (MEGA Project): permanent support to UN-GGIM: Americas in this project as a facilitator of the dialogue between national statistics offices and geospatial organizations.
3. Coordination and collaboration with UN-GGIM Americas in Directive board meetings, working groups meetings, organization of UN-GGIM: Americas plenary meetings and in the development of regional initiatives and projects.
4. Support the design, dissemination and global consultation processes of UN-GGIM guidelines and frameworks at country level in the region (i.e. GSGF, Framework on Effective Land Administration, Integrated Geospatial Information Framework).
5. Participate and contribute in global initiatives, task teams and UN-GGIM working groups: Integration of Statistical and Geospatial Information, Inter-agency and Expert Group on SDG Indicators (IAEG-SDGs), Integrated Geospatial Information Framework, and also in Group on Earth Observation (GEO).
6. Provide technical assistance to National Statistical Offices (NSOs) in census cartography generation and the updating of activities, methodologies and procedures.
7. Participate as Secretariat in the Working Group of Census (cartographic subgroup is included) of the Statistical Conference of the Americas of ECLAC (SCA-ECLAC).

ECLAC

Geospatial Data

Up-to-date geospatial data is located at the Population Division in ECLAC. The data includes: demographic thematic maps, such as population migration flows, social inequalities of indigenous people in Latin America, the distribution of the elderly, and disaggregated SDG indicators.

Geospatial Usage

- Data collected or disseminated at the level of small geographical areas
- Social statistics (e.g. spatial modelling of social outcomes), spatial analysis of social inequalities (hot spots)
- Demographic statistics (e.g. population data distribution)

Geospatial Resources

One professional staff and one general service staff.

Geospatial Representatives

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Relevant links

- www.eclac.org

Economic and Social Commission for Asia and the Pacific (ESCAP)

Geospatial Activities

The United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) is the regional development arm of the United Nations for the Asia-Pacific region. ESCAP is comprised of 53 Member States and 9 Associate Members. The region is home to 4.1 billion people and makes ESCAP overseeing most populated of the most five regional commissions.

The overall objective of ESCAP is to promote inclusive and sustainable economic and social development in the Asia-Pacific region, with priority focused on the achievement of the SDGs. ESCAP pursues this objective by carrying out work, in close cooperation with other UN entities and intergovernmental organizations in the region, in the following areas: a) macroeconomic policy and financing for development; b) trade, investment and innovation; c) transport; d) environment and development; e) information and communications technology and disaster risk reduction; f) social development; g) statistics; and h) sub-regional activities for development.

The Information and Communications Technology and Disaster Risk Reduction Division (IDD) is in charge of implementing geospatial work, in collaboration with other divisions and cooperation partners in the region.

In November 2018, through Resolution adopted at its 7th Plenary Meeting of the UN-GGIM-AP which was held in Deqing, China, ESCAP was requested to serve as the secretariat of UN-GGIM-AP. The Information and Communications Technology and Disaster Risk Reduction Division supported by the Statistics Division services UN-GGIM-AP.

In May 2019, the Asia-Pacific Plan of Action on Space Applications for Sustainable Development (2018-2030)[1] were adopted by ESCAP member States. The Plan of Action is a regionally coordinated, inclusive and needs-driven blueprint that harnesses space and geospatial applications to achieve the 2030 Agenda. The Plan of Action includes 188 actions in six thematic areas: (a) disaster risk reduction and resilience; (b) management of natural resources; (c) connectivity; (d) social development; (e) energy; and (f) climate change. The implementation modalities are through research and knowledge-sharing; capacity building and technical support; and intergovernmental discussions and regional practices. Among the three, capacity building and technical support has been identified by countries as the priority in implementing the plan of action. The Plan is divided into three implementation phases- each a four-year duration- with a ministerial conference to be convened at the end of each phase.

Geospatial Data

Considering the growing use of geospatial data in the region ESCAP has for a number of years facilitated the exchange of data between space faring countries of the region and users, through regional cooperative mechanisms as outlined below.

- Thirty-four member countries of ESCAP's long-standing Regional Space Applications Programme for Sustainable Development (RESAP), that include all spacefaring nations in the region, provide space-derived data and technical support for disaster risk reduction and resilience.
- Regional Service Nodes of ESCAP's Regional Drought Mechanism in China, India and Thailand provide tailored tools and satellite imagery/data for building capacity in drought-prone countries.

1. https://www.unescap.org/resources/asia-pacific-plan-action-space-applications-sustainable-development-2018-2030

ESCAP

- Member States of United Nations Global Geospatial Information Management Asia Pacific (UN-GGIM-AP) are working in thematic areas such as geodesy, land management and the integration of geospatial Information and statistics. They also support ESCAP's initiatives for maximizing economic, social and environmental benefits of geospatial information in the region.
- Upon ESCAP's request cooperation partners, including UNITAR-UNOSAT (Operational Satellite Applications Programme, see UNITAR), Group on Earth Observation (GEO), Committee on Earth Observation Satellites CEOS, UNOOSA, Sentinel-Asia and other regional institutions, provide timely geospatial data.
- The Statistics Division of ESCAP works on integrating geospatial data and statistics from various sources.

Geospatial Usage

ESCAP is promoting- through regional sharing of expertise - new and innovative applications of geospatial data usage as follows:

- The timely provision of near real-time satellite imagery to disaster-affected countries.
- Institutional capacity building to promote the scope of geospatial information applications in developing countries in the region.
- Implementation of the Plan of Action in six thematic areas (2019-2022), in particular: disaster risk reduction; land management; resilient agriculture; drought monitoring; regional data hub development; and urban resilience and sustainability,
- Exploration and identification of solutions using geospatial data and statistics, that will be promoted for application by national statistical systems: this will be carried out through regional statistical capacity building to support evidence-based decision making.

Geospatial Resources

- Six professional staff and three general service staff
- National Focal Points in 34 member countries of RESAP
- Supporting and partner institutions in the region such as Asian Institute of Technology (AIT), Asia-Pacific Space Cooperation Organization (APSCO), ASEAN Research and Training center for Space technology and Applications (ARTS), Asia-Pacific Regional Space Agency Forum (APRSAF), Centre for Space Science and Technology Education in Asia Pacific (CSSTEAP), Multi-GNSS Asia (MGA), and Statistical Institute for Asia and the Pacific (SIAP).

Geospatial Representatives

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Relevant links

- http://www.unescap.org/our-work/ict-disaster-risk-reduction
- https://www.unescap.org/resources/asia-pacific-plan-action-space-applications-sustainable-development-2018-2030
- https://www.un-ggim-ap.org/

Economic and Social Commission for Western Asia (ESCWA)

Geospatial Activities

The United Nations Economic Commission for Western Asia (ESCWA) is one of five UN regional commissions, covering 18 member Arab countries in the Middle East and North Africa: ESCWA is expected to cover all 22 Arab countries in the coming year. It has no specific geospatial programme, but the Statistics Division has been designated the ESCWA focal point for geospatial information. The increasing links between geospatial and statistical information are evident in several parts of ESCWA's statistical work programme, including topics such as statistics for the SDGs, population and housing censuses, and statistics on the environment.

ESCWA also has a Committee on Urban Development, Housing, Transport and Climate Change which focuses on policy aspects on these topics in the region.

Based on the recommendations of the United Nations Global Geospatial Information Management (UN-GGIM)- Arab States meeting in February 2020, ESCWA and UNGGIM: Arab states concluded an initiative for greater collaboration on geospatial information management, which is expected to be endorsed by ESCWA management once the elements of the initiative are agreed upon. This initiative highlights strategic areas for collaboration, including geospatial information for sustainable development, building networks and promoting communication, integration of geospatial, statistical and other information, and capacity development.

ESCWA also attaches a high priority to support for development, acquisition and implementation of technologies supporting geospatial information management, as a pre-condition for effective use of geospatial information. Such technology will enable ESCWA to pursue it efforts in the field of e-Governance and e-Government. This cluster will also be included in the work Programme of the Regional Committee for the GGIM for Arab States, mainly supporting the annual meeting of UN-GGIM: Arab states, and to organize with United Nations (DESA) Statistics Division workshops on implementing the Integrated Geospatial Information Framework.

ESCWA and UN-GGIM: Arab States are facilitating improved collaboration between national geospatial and statistical organizations in population and housing census work in the Arab countries. ESCWA also engages with other relevant projects and organizations outside the United Nations system and has recently concluded an agreement to be a participating organization in the Group for Earth Observations (GEO). ESCWA will organize, in cooperation with UNGGIM- Arab States and regional partners, regional workshops on the integration of geospatial information with population and housing censuses and in the compilation of spatial indicators of Sustainable Development Goals in 2020 and beyond.

ESCWA

Geospatial Data

ESCWA is not a primary custodian of any geospatial data. Any data containing geospatial references were collected by the respective agencies of member states, and ESCWA has limited rights to the use and share of these data. A typical data set maintained by ESCWA would be a microdata set from household surveys with geospatial references (coordinates) for individual data or a cartographic file with the transport network and similar files.

Geospatial Usage

- Demographic Statistics (e.g. Population data distribution)
- Climate change and environment
- Transport analysis
- Suitable development indicators

Geospatial Resources

ESCWA has no dedicated resources for geospatial information management activities.

ESCWA Statistics Division runs capacity development workshops (geospatial information systems for population and housing census and through a Development Account for SDGs indicators)

Geospatial Representatives

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Relevant links

- https://data.unescwa.org/
- https://www.UNGGIM-as.org/en/Pages/default.aspx

A child has a meal at a food distribution centre in the Rwanda camp for internally displaced persons, near Tawila, North Darfur, Sudan.

Today, more than 820 million people regularly go to bed hungry, of whom about 135 million suffer from acute hunger largely due to man-made conflicts, climate change and economic downturns.

Credits: UN Photo/Albert Gonzalez Farran (2014)

FUNDS, PROGRAMMES & RESEARCH

"The UN system, also known unofficially as the 'UN family', is made up of the UN itself and many programmes, funds, and specialized agencies, all with their own leadership and budget. The programmes and funds are financed through voluntary rather than assessed contributions. The Specialized Agencies are independent international organizations funded by both voluntary and assessed contributions."

United Nations Development Programme (UNDP)

Geospatial Activities

As it supports recovery and change in post-conflict contexts, there is a recognized need in UNDP for more visible results, achievements and impact, namely for monitoring results, tracking change and communicating developments to all involved stakeholders.

Since 2013, UNDP has contributed to the transformational change in capacity building of institutions, and state and local authorities, to improve citizen-state relations, participation in decision making, accountability, and people's access to public and judicial services. UNDP has led the reconstruction of several state administrative buildings, the classification of sites for world heritage, the promotion of early recovery activities, as well as supporting the rehabilitation of destroyed sites.

Yet, the visibility of achievements is still a concern for country offices and all involved partners. Although communication, monitoring and reporting teams have maintained efforts to provide timely accurate and updated information, data and illustrations from the field, security and access are inevitable constraints that still limit their progress. Whilst exploring suitable solutions to address the issues around communication and tracking, it was found that the Satellite Images Mapping System for Monitoring and Communication for Results was an appropriate option.

The objective is to enhance overall UNDP communication and the field monitoring of development changes and partnership mobilization through the implementation of a satellite imaging analysis and visualization platform. The first phase (2017 – 2020) focuses on the communication and monitoring of UNDP results on the reconstruction of public infrastructures. These actives of this phase will remain as ongoing activities. The next phases (2020 – 2023) will integrate other socioeconomic and environmental changes that can be visually captured from UNDP's and partners' interventions.

Fields of activity/structure:

1. Enhance project monitoring:
   - Reconstruction of infrastructure
   - Environnemental monitoring (Forest protection, agricultural zones expansion, etc.)
2. Enhance transparency for UNDP:
   - Communicating with donors, implementation partners
   - Transparency portal open.undp.org and Publish What You Fund
3. Enhance government accountability:
   - Complement tools that UNDP offers to government to enhance accountability, for example, for public works. Data would be made publicly available
   - Members of the public can upload photos, etc. to document progress on specific public works – similar to current experiments that the Innovation Labs (Acceleration Labs) has part funded (e.g. "Fix my Island" in the Maldives)
   - Public project monitoring could be 'crowdsourced'
4. Coordinate projects in crisis countries:
   - Crisis response/damage assessment, e.g. in the aftermath of natural disasters, civil war etc. Recent images will be needed.
   - Locating several interventions and decision centres on maps and localizing project versus impacted zones
5. Plan responses and informing local communications:
   - Election preparation
   - Evacuation plans in areas at risk (floods, wars, sand storms, etc.)
   - Disaster recovery plan
6. Contribute to SDG data monitoring:
   - In the context of urbanization
   - By adding photos of changes/main events

Geospatial work within UNDP is new. Currently, UNDP is partnering with other UN agencies to assist in the handling of satellite imagery and GIS analysis. Meanwhile, UNDP is building internal capacity throughout the organization.

Geospatial work programme

1. Development

Strengthened visibility of partnership between the Governments and UNDP

2. Managerial

Development of programmes and structures for increased accountability, transparency and communication for development at all levels.

3. Technical

The project is producing the following technical deliverables:

a. High definition raw satellite images
b. Geographic Information System (GIS) Platform-Enterprise agreement with Esri
c. Mobile app to load photos
d. Improved visualization and monitoring
e. Capacity building

Geospatial Data

- Extracted satellite imagery data
- Project data posted on UNDP transparency portal (open.undp.org)
- Locally-collected data through UNDP country offices
- Public data
- Human Development Report indexes

Geospatial Usage

For monitoring and evaluation, analysis, post-crisis damage assessment, empowering decision making.

Geospatial Resources

The UNDP GIS team currently comprises two UNDP staff (half time or less), one United Nations Volunteer, and one consultant.

Partnership with Space Agencies and UN agencies.

Geospatial Representatives

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United Nations Environment Programme (UNEP)

Geospatial Activities

The United Nations Environment Programme (UNEP) is the leading global environmental authority that sets the global environmental agenda, promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and serves as an authoritative advocate for the global environment. UNEP is responsible, through a strategic regional presence, for the provision of timely, scientifically sound, policy-relevant environmental analyses, data and information for decision making and action planning for sustainable development.

The geospatial functions and activities in UNEP are conducted through the Science Division (including GRID-Geneva), the six regional offices and the GRID-Centres network (see below).

UNEP's main development in geospatial technologies is the generation of a new Data, Information and Knowledge platform entitled the World Environment Situation Room (WESR) to support, global, regional and national policy making, which is facilitated by environmental information made available on open platforms.

Geospatial Data

UNEP provides a wide number of products and datasets. They are accessible through the World Environment Situation Room (https://wesr.unep.org), mostly served via MapX (https://mapx.unepgrid.ch) and a searchable metadata catalogue, based on GeoNetwork, that documents datasets and web map services. An Application Programming Interface (API) is under development.

Geospatial Usage

The geospatial information facilitates global, regional and national policy making through open platforms (e.g. World Environment Situation Room (https://wesr.unep.org).

- Spatial Data Infrastructure (SDI): Open Geospatial Consortium (OGC) for data dissemination via webservices, API and contributing to the improvement of data dissemination, linked data and data dissemination for provision of near real-time data and automatic updates.
- Interactive Mapping Platforms: Developing interactive Mapping Platforms for displaying, interrogating, analysing and disseminating geospatial data (e.g. for the generation and maintenance of the World Environment Situation Room (WESR).
- Geographic Information System (GIS) and Spatial modelling/geoprocessing: monitoring the environment and reporting on its status requires the processing and analysis of many different types of data such as geophysical data (climate, soil), topographic data, hydrological data, biodiversity data, socio-economic data and many others. For better reporting, the capacity to upscale and downscale data is also essential. UNEP is also developing its own GIS software (coded by UNEP/GRID-Geneva) but also uses property software (e.g. ESRI).
- Remote sensing: Using the latest technologies for processing satellite imagery (e.g. data cube, image object analysis) as well as regular usual remote sensing techniques. This can be used for monitoring trends on environmental status. Automation of remote sensing analysis, conversion of raster data to graphs (e.g. for the creation of SDGs indicators).

Geospatial Resources

The Global Resource Information Database (GRID) is a system of cooperating centres within UNEP's network that is dedicated to making environmental information more readily accessible to environmental analysts, as well as international and national decision makers. Its mission is to provide timely and reliable georeferenced environmental information and access to a unique international data service, to help address environmental issues at global, regional and national levels.

The GRID-Centres network includes GRID-Geneva (within UNEP Science Division since 1985), GRID-Arendal (Norway), GRID-Warsaw (Poland), GRID-Abu Dhabi (UEA), GRID-Sioux-Falls (USA), as well as GRID-like centres, such as WCMC (within UNEP Ecosystems Division) and DHI (Denmark).

Together, the GRID-centres includes about 40 specialists with expertise mostly in environment sciences, geospatial information systems and remote sensing.

Geospatial Representatives

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Relevant links

- https://wesr.unep.org

United Nations Population Fund (UNFPA)

Geospatial Activities

The United Nations Population Fund (UNFPA) is currently establishing a geospatial community of practice for its staff, as the demand for generating and using geospatial data across the Organization is increasing. The increase is further fuelled by the 2020 global Census Round with most countries adopting digital and georeferenced data collection methodologies, with UNFPA as a major supporter of the National Statistical Offices in that endeavour.

Other mandated activities of UNFPA also increasingly require use and analysis of geospatial data and various data geo-visualisation solutions at global, regional or national levels. The ongoing COVID-19 pandemic has further intensified the need for good and accurate population data and demographics, increasing demand within and outside UNFPA in this domain.

The Population and Development Branch (PDB), within the Technical Division of UNFPA has been designated by UNFPA leadership to increase the use of geospatial data and to support the UNFPA Strategic Plan (2014-2017) Outcome 4 *"Strengthen national policies and international development agendas through integration of evidence-based data analysis on population dynamics and their links to sustainable development, sexual and reproductive health and reproductive rights (SRHR), HIV and gender equality".* In this context, PDB provides capacity strengthening to its Regional and Country Offices as well as to countries' National Statistical Offices in their use of geospatial methods, and helps generate geospatial mapping of key aspects of sexual and reproductive health, population vulnerabilities to climate change, youth vulnerabilities etc. to support better programming and policy making. Spatial data analysis is an essential tool to locate and identify populations with relatively greater vulnerabilities and need for UNFPA programming, and for monitoring progress over time.

UNFPA also joined the GRID3 partnership (www.grid3.org) in 2018 and is intensifying geospatial support through that project as well in the targeted countries.

Examples of our geospatial work include:

1. Development of small area estimation (SAE) methods by leveraging Census and DHS data in small area mapping to provide high resolution analysis of population use of family planning.
2. Population vulnerability to climate change analysis by integrating census data on population age structure and distribution, household survey data with diverse spatial data, such as infrastructure, land use/cover and environmental data.
3. Development of automated spatial analysis tools such as the Demographic Explorer for Climate Adaptation (DECA) or the upcoming Population Data Platform applications.
4. Support to countries for the estimation of population numbers and distribution using very high-resolution remote sensing data and modelling, in collaboration with governments, other UN agencies, academia and private sector. UNFPA is strongly engaged in inter-agency coordination activities as well, including UN-GGIM.

Geospatial Data

Through the upcoming Population Data Platform, access will be opened to approximately 120 georeferenced demographic indicators relevant to the SDGs and UN Common Country Analysis at subnational levels, and UNFPA experts will also work with countries to improve microdata processing and census microdata geospatial analysis. UNFPA also supports the COD PS (Common Operational Datasets – Population Statistics) data development and subnational administrative boundaries data improvements through projects such as SALB (Second Administrative

Level Boundaries) programme within the United Nations, in collaboration with other UN entities.

As a Bill and Melinda Gates Foundation grantee (GRID3 project), UNFPA has access to the building footprints and road networks' datasets derived from commercial satellite imagery, for the entire sub-Saharan Africa region, and works to generate useful products from it. These data are also used to support the census cartography and census preparations in many programming countries. In addition, UNFPA is also purchasing very high resolution (50cm) satellite imagery mosaics for full coverage of select countries it supports through the GRID3 project, or census-related funding. These purchased satellite imagery data are also shared with other UN entities in-country, on request, as UNFPA is a strong supporter of data sharing and inter-agency cooperation in data acquisitions and licensing.

Geopatial Usage

In addition to working with various indicators in its mandated activities, many of which are geospatial in nature, UNFPA is also routinely supporting the collection of censuses, census cartography and survey data.

In the context of the GRID3 project and in support of National Statistical Offices and their work with census data, UNFPA provided Sexual and Reproductive Health and Rights (SRHR) and family planning-related sub-national data analysis and geospatial mapping, and related capacity strengthening, to address specific requirements identified at the country level and to improve its own delivery in the mandated areas.

Geospatial Resources

UNFPA has 14 PDB staff at HQ, and around 130 Population and Development (PD) Advisers based in Regional and Country Offices, with various levels of geospatial skills.

Esri's ArcGIS Enterprise solutions are being deployed across the organization through a negotiated Enterprise License Agreement (ELA), to increase geospatial capacity, and an enterprise geospatial database is being set up to allow external exposure of subsets of data for the public Population Data Platform, as well as synchronization of geospatial datasets with other UN entities' enterprise systems. Use of Open Source geospatial software is also encouraged where preferred in the Organization, as long as agreed data and interoperability standards are upheld.

Geospatial Representatives

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Relevant links

- http://www.unfpa.org/
- http://covid.pdp.unfpa.org/ (Covid-19 pandemic-related public dashboards)
- http://pdp.unfpa.org/ (future UNFPA Population Data Platform, not yet operational)

United Nations Human Settlements Programme (UN Habitat)

Geospatial Activities

UN-Habitat is the United Nations programme working towards a better urban future and its mission is to promote socially and environmentally sustainable human settlements development and the achievement of adequate shelter for all.

Cities are facing unprecedented demographic, environmental, economic, social and spatial challenges. There has been a phenomenal shift towards urbanization, with 6 out of every 10 people in the world expected to reside in urban areas by 2030. Over 90 per cent of this growth will take place in Africa, Asia, Latin America, and the Caribbean. In the absence of effective urban planning, the consequences of this rapid urbanization will be dramatic.

UN Habitat's geospatial activities include:

- Image processing workflows to extract land cover and land use data
- Identification and extraction of data on open public spaces from land use plans, satellite imagery and open layers
- Identification of transport nodes
- Modelling of urban inequalities and mapping of slums and informal settlements and their manifestations in cities
- Disaggregation of population data
- High-resolution neighbourhood mapping for urban planning processes
- Activities around harmonized approaches to definition of cities which rely on geospatial data
- Automating processes for data extraction from earth observation and geospatial information sources
- Building capacities of national statistical offices and city officers in geospatial data generation and analytics
- Production of reports and city profiles based on geospatial data

Geospatial Data

Our main data products include:

- Built up area layers by city/urban settlement
- Locations of open public spaces and served populations
- Locations of transport hubs and served populations
- Proportion of population living in slums

Geospatial Usage

- Understanding urbanization trends
- Visualizing trends across cities
- Urban planning processes
- Supporting decision making and policy formulation processes at the city level

UN HABITAT

Geospatial Resources

The UN Habitat counts 5 geospatial information managers at headquarters and 5 additional located in regional offices. In addition, geospatial users account for around 60 staff.

Geospatial Representatives

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Relevant links

- https://unhabitat.org/
- https://urban-data-guo-un-habitat.hub.arcgis.com/

United Nations Children's Fund (UNICEF)

Geospatial Activities

Only when we get a good enough understanding of where events happen or where people live can we make informed decisions and drive effective interventions.

With an external geospatial environment that is evolving at a blistering pace, today, across UNICEF there is a significant and increasing demand for geospatial work. The benefits of fit-for-purpose geospatial work to programming/core business are clear, including more rational use of resources, inclusivity and engagement, and more solid foundations for making decisions. This is particularly crucial in some of the areas where UNICEF's work is evolving the most quickly, including responses to urbanization, changing migration and displacement patterns, and climate change.

Geospatial Data

UNICEF leads a number of data collection programmes, including the Multiple Indicator Cluster Surveys, providing statistically sound and internationally comparable data on women and children worldwide. In addition, a number of internal corporate systems are used to geolocate UNICEF interventions and partnerships as well as planning and monitoring activities.

Geospatial Usage

The ability of geospatial tools to provide location-specific information enables valuable insights into the distribution of needs and how to optimize development investments and planning, as well as humanitarian responses. For example, spatially defined infrastructure and population data is used to understand existing service coverage and opportunities for future investment. Policymakers track poverty rates across regions, analyse and act on the geography of inequity, or monitor incidence rates and hotspots of diseases, whether endemic, such as malaria, or an outbreak. Geospatial tools complement traditional data systems such as census data, administrative data, household survey data, vital statistics, and economic data. And integrating geospatial data with data from other sources enables disaggregation and analysis by spatial characteristics, such as proximity to roads, health clinics, public transportation, or levels of urban development. Geospatial information is also a key component in real-time situational awareness during emergency responses.

In country offices, examples of efficient use of geospatial information include:

- Supporting near-real-time programmatic optimization decisions in Haiti
- Driving targeting and coverage decisions in Lebanon
- Service delivery/logistics optimisation that depends not just on knowing where the roads are (from remotely sensed data) but what condition they are in (from in-situ observations) in Malawi
- Geo-locating pockets of disadvantage based on household survey and complementary data in Thailand
- Disaster risk mapping in Myanmar, Nepal and Indonesia

Geospatial Resources

Staff involved in Geospatial Information Management are distributed throughout UNICEF headquarters, regions and countries. The estimated amount of staff is 5 geospatial information managers at headquarters, 15 in regional headquarters and 30 in-country offices. Power users of geospatial information and tools account for over a thousand staff.

Most of the geospatial data at UNICEF is stored in PostGIS, SQLServer or as files in KML, Esri Shape, Esri file geodatabase or GeoTIFF formats.

Geospatial tools include ArcGIS, Google Earth and QGIS on single-user Windows machines and server-based, often cloud, which include access to the data through direct connections and web map viewing using the Google API or Leaflet-MapBox.

Geospatial data is also consumed by statistical packages (SPSS, R, Excel) and BI tools such as PowerBI and Tableau. UNICEF uses also ArcGIS Online and ArcGIS Enterprise for geospatial data sharing and for creating interactive geospatial web maps and dashboards. Additionally, Survey123 as well as open source ODK / KoboToolbox are used for mobile data collection in the field.

UNICEF has put together a set of templates and base layers to help staff get started with mapping. All map templates come with three base layers that are based on UN Maps (last updated January 1, 2019): populated places, boundary lines and boundary areas (with country and territory labels). All UN Map layers are symbolised and labelled in accordance with the United Nations Guidance for the Publication of Maps (2018).

To meet the increasing internal demand for GIS capacity, UNICEF set up long-term arrangements (LTAs) for services that will provide a suite of geospatial data support to all offices, while making the contracting process efficient. LTAs are modular in nature, encompassing a wide variety of on-site and off-site tasks that are needed across UNICEF's geographic structure and common operations. In emergency contexts, firms are able to reach capacity within 72 hours and deploy self-sufficient individuals who are comfortable in fragile or conflict settings when requested. There are four service categories within the LTAS:

1. Geospatial data collection and management
2. Mapping and GIS products, data analysis, spatial statistics
3. Knowledge management, technical writing, ddocumentation
4. Supporting organizational strategy, change management, and capacity building

Geospatial Representatives

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Relevant links

- https://data.unicef.org/
- https://mics.unicef.org/
- https://data.unicef.org/wp-content/uploads/2019/05/Geospatial-Roadmap-Summary_May-2019.pdf

World Food Programme (WFP)

Geospatial Activities

In support of the Organization's mission and interagency responsibilities, Geographic Information System is used to collect, process, and manage the wide variety of data created by WFP programmes, as well as partners.

The mission of WFP's geospatial sections is to provide geospatial information, analysis, remote sensing and mapping support, for preparedness and response activities, both in emergency and non-emergency context, for both WFP and a wide array of partners.

The main focus of the geospatial work reflects the global organizational mandate. The most relevant GIS activities include:

- Mapping WFP's presence on the ground, WFP programmes and operations
- Monitoring of agro-climatic cycles and growing seasons and their effects on food security
- Monitoring early warning (natural hazards and human-driven emergencies)
- Mapping logistics-related activities and status of infrastructures
- Mapping security status and access to areas of interest
- Spatial accessibility modelling for providing information about physical access to facilities (markets, health centres, schools etc.)
- Training and capacity development

These activities are carried out at all levels of the disaster cycle to provide a clear and accurate picture of on-going operations, by bringing together important operational information, identifying critical gaps that might affect the humanitarian emergency response and improving its timeliness and efficiency.

WFP also relies on a solid network of partners from the scientific community, NGOs, other UN agencies and external data providers. Partnerships allow WFP to gain access to the most recent high-resolution satellite imagery and remote sensing analysis services, which are used to identify the impact of natural disasters and conflicts on population displacement and vulnerability.

Geospatial Data

As part of the geospatial data preparedness initiatives carried out by the GIS unit with Regional Bureaux (RBs) and country offices (COs), a list of datasets, needed to produce crucial maps in the aftermath of a disaster, has been compiled over the years and GIS practitioners in the organization coordinate to maintain it and keep it ready to be mapped at any time. These datasets include information about:

- Transportation (roads, railways, ports, airports, etc.)
- Population (figures, density, distribution)
- Boundaries (admin 1 – 4)
- WFP presence, facilities, warehouses, supply routes
- Points of interest (settlements, border crossing points, dams, etc.)
- Hydrographic (rivers, lakes)
- Physical (land cover, land use, hill shades)
- Natural hazards (seismic zones, earthquakes, cyclones, etc.)

Geospatial Usage

GIS teams in WFP are very active in open source communities in order to integrate cutting edge technologies into their geospatial workflows. The GIS development team in Emergency Preparedness and Support to Response (EME) has contributed with the World Bank to the development of an open-source platform called GeoNode, which is currently used in the organization for creating and sharing geospatial data and maps.

After its release in 2015, the automated alert system called ADAM (Automated Disaster Analysis and Mapping) has become one of the most powerful tools for triggering emergency preparedness for a timely response. ADAM started releasing near-real time earthquake alerts, in the form of dashboards with feature details about the potential impact of the event on population, infrastructures and WFP resources. Further, in 2017, ADAM was expanded to monitor tropical storms and designed to send regular alerts on the trajectory and potential impact of the hurricane on residents. To complement the product, ADAM automatically creates a dashboard that shows the expected rainfall in the region and key cities hit by the storm.

WFP's Hunger Monitoring Unit under Vulnerability Analysis and Mapping (VAM) recently released HungerMapLIVE, a global hunger monitoring system that pulls together from various sources, food security, weather, population, conflict, nutrition and macro-economic data to predict – using machine-learning-based predictive models – and monitor food security in near-real time. Together with Dataviz, it represents another powerful tool for featuring interactive data visualizations related to food security, climate and economic indicators.

Geospatial Resources

In WFP, GIS functions primarily reside within VAM teams at the field level, and with the EME at HQ. About 25 GIS staff are based in HQ between EME and VAM, in addition to some 90 GIS practitioners in the field (between RBs and COs). To provide unlimited access to the best available software for analysis and mapping, WFP benefits from an Enterprise License Agreement (ELA) signed with Esri – leading company in GIS – in 2014. The agreement allows WFP to standardize production workflows across the Organization and the look-and-feel of products, as well as creating a solid network infrastructure to more easily exchange geospatial data at all levels.

Geospatial Representatives

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Relevant links

- GeoSpatial services: http://geonode.wfp.org
- ADAM: https://geonode.wfp.org/adam.html
- HTA: https://geonode.wfp.org/imaps/hta/map/
- HungerMapLIVE: https://hungermap.wfp.org/
- VAM data visualization platform: https://dataviz.vam.wfp.org/

United Nations Institute for Training and Research (UNITAR)

Geospatial Activities

UNOSAT, the United Nations Institute for Training and Research's (UNITAR) Operational Satellite Applications Programme, is a technology-intensive programme supporting the United Nations core objectives. As a centre of excellence for satellite imagery analysis and GIS solutions, expertise is used to provide geographic insight for senior decision-makers and field workers within and outside the UN system, with special focus on Member States. UNOSAT is hosted at CERN, the European Organization for Nuclear Research.

The vision of UNITAR-UNOSAT is to promote evidence-based decision making for peace, security and resilience, and its mission to provide coordinated geospatial analysis and develop capacities for the use of geo-information technology towards achieving the Sustainable Development Goals (SDGs). The strategic objectives are:

1. To provide coordinated geospatial analysis to UN and Member States in time of crisis;
2. To develop capacities in the use of technology towards achieving the SDGs;
3. To develop and promote innovative geospatial solutions for the UN system, its partners and Member States.

These objectives result in geospatial products and services, primarily derived from satellite imagery, for decision-makers and field workers within Member States as well as the UN system, and capacity building of national and regional actors in the use of geographic information technologies (GIT) for disaster risk reduction, sustainable development, peace and security. Typical areas of satellite imagery analysis include humanitarian relief, conflict analysis, environmental assessments, protection of cultural heritage, disaster risk reduction and climate change resilience, human rights and sustainable development. Knowledge transfer, through training and capacity development to Member States and other actors, is also provided within the same thematic areas. UNOSAT is the focal point for geospatial activities in the Global Disaster Alert and Coordination System, coordinated by the United Nations Organization for the Coordination of Humanitarian Affairs (OCHA), including the Satellite Mapping Coordination System (SMCS) for operational coordination of satellite mapping activities during humanitarian disasters.

Structure:
UNOSAT consists of three sections:

- Disaster Risk Management and Climate Resilience Section
- Human Security and Human Rights Section
- Business Exploration, Strategic Planning and Coordination Section

UNOSAT has its headquarters in Geneva, with offices in Bangkok, Nairobi and New York and is also hosted by governments in Fiji, Vanuatu and the Solomon Islands.

Geospatial Data

UNOSAT's focus is on satellite imagery from free and open sources as well as commercial data, in-kind donations and from the International Charter on Space and Major Disasters. UNOSAT derives information products from satellite imagery and related geodata including maps, statistics, reports, geodata for direct integration including in GIS systems, web-maps, story maps and customised products.

Geospatial Usage

Geospatial data from UNOSAT is used widely in support of Member States and thematically mandated United Nations agencies, as well as the Red Cross and Red Crescent movement.

Geospatial Resources

UNOSAT has 32 specialists working on various areas of geospatial information management, with a focus on satellite imagery analysts.

Geospatial Representatives

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Relevant links

- http://www.unitar.org/unosat/

United Nations High Commissioner for Refugees (UNHCR)

Geospatial Activities

Field Information and Coordination Support Section is responsible for global support to geospatial activities within UNHCR. The section is within UNHCR's Division of Programme Support and Management. In addition, UNHCR has operations in over 200 locations, and geospatial activities are undertaken by many of these offices.

To support UNHCR field operations, partners and support structures with geographically informed decision making in order to provide protection, deliver assistance and seek solutions to the situations of forcibly displaced and stateless persons globally.

Geospatial Data

Geospatial work programme related to geospatial data are as follows.

- Establishment of corporate GIS infrastructure
- Establishment and maintenance of georeferenced data
- Establishment of standards for maps and other georeferenced products
- Support to operations and staff globally with geospatial activities

Geospatial Usage

Fields of Activity related to geospatial usage are as follows.

- GIS
- Mapping
- Georeferenced products
- Coordination with sectors and other data providers
- Enhancement of geography as unit of analysis, presentation and understanding with UNHCR's work with forcibly displaced persons

Geospatial Resources

The number of staff is 6 in headquarters (Geneva and Copenhagen), approximately 20 in field operations, not all dedicated to working on geospatial services

Geospatial Representatives

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Relevant links

- unhcr.org
- data.unhcr.org
- maps.unhcr.org
- popstats.unhcr.org

United Nations Office for Project Services (UNOPS)

Geospatial Activities

The United Nations Office for Project Services (UNOPS) is focused on implementation support of other United Nations entities' efforts to bring peace and security, humanitarian and sustainable development solutions to some of the world's most challenging environments. As UNOPS is a project-based organization, UNOPS performs some activities related to geospatial information systems in response to its partner requirements for various implementation projects. As an example, UNOPS provides support through around 10 geospatial experts and developers in the delivery of mandates associated with peace and security, in support of the work of the Office of Information and Communications Technology, Global Service Centre and field missions.

In UNOPS there are currently no overarching, centralized activities related to geospatial information management.

Geospatial Data

The location of UNOPS projects around the world are shared on https://data.unops.org

UNOPS

Geospatial Representatives

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Relevant links

- https://data.unops.org

United Nations Entity for Gender Equality & the Empowerment of Women (UN Women)

Geospatial Activities

UN Women is the United Nations entity dedicated to gender equality and the empowerment of women. Central to carrying out UN Women's mission is improving the production and use of gender statistics through the Making Every Woman and Girl Count (Women Count) programme.[1] Women Count aims to bring about a radical shift in how gender statistics are used, created and promoted and seeks to address the urgent need to increase the availability of accurate information on gender equality and women's rights in order to inform policy and decision making.

Geospatial data is a new area of work that is currently being explored under the framework of the Women Count programme to identify innovative ways to improve the production and use of gender statistics. More specifically:

- The Global Centre of Excellence on Gender Statistics (CEGS)[2] was established to explore innovations in gender statistics, namely on the potential uses of geospatial information. Launched in September 2018, as a collaboration between Mexico's National Institute of Statistics and Geography (INEGI) and UN Women, CEGS serves as platform for collaboration, knowledge sharing and innovation on gender statistics and to contribute to the implementation and monitoring of the 2030 Agenda and the SDGs. As part of its Innovation Lab function, the CEGS aims to play a key role in unlocking the potential uses of geospatial information to yield new insights in gender statistics, in areas such as measuring women's economic empowerment and extreme forms of violence against women. Furthermore, the CEGS is contributing to building a multidisciplinary network of experts in this field, in an effort to make work on gender and geospatial information more visible and widely available.
- GIS data has been used to inform cutting-edge research and analysis around intersecting inequalities to map those left behind the farthest. UN Women conducted a study using 2017 GIS data from the Pakistan Demographic and Health Survey to identify inequalities among women and girls. Mapping multiple deprivations that are spatial in nature, reveals that being in a remote rural area or urban slum in Pakistan is associated with poverty, unavailability of improved water and/or sanitation facilities and lack of access to health facilities.[3] The multi-dimensional maps derived from this analysis puts into sharp focus the tendency of deprivations to cluster together and bolsters the call for an interdependent approach to the 2030 Agenda and its 17 development goals.
- UN Women leads on training and capacity building activities for National Statistical Offices (NSOs) on how to integrate GIS data to measure the impact of climate change on women and girls. In Asia and the Pacific, UN Women – in coordination with the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the United Nations Statistical Institute for Asia and the Pacific (SIAP) – has conducted data integration exercises utilizing GIS and Demographic Health Survey data in Bangladesh, India, and Nepal to study the differential impacts of climate change on men and women. A training module is currently being developed to support countries in the region to replicate this analysis using GIS and will be included in the Asia-Pacific training curriculum on gender statistics.

1. See https://data.unwomen.org/women-count
2. https://data.unwomen.org/where-we-work/cegs
3. This analysis will be featured in a forthcoming book "Mapping Gender-based Inequality: GIS approaches to Gender Analysis." This book will be published by Routledge and the editor is Esra Ozdenerol, Ph.D. Professor, Director of GIS Certificate Program Department of Earth Sciences, University of Memphis.

UN WOMEN

Geospatial Data

- Capacity building/training of NSOs to use GIS data to measure impact of climate change on women and girls
- Facilitate South-South collaboration between NSOs, through the CEGS, to promote knowledge sharing to develop geospatial tools/platforms that integrate geospatial data and gender statistics
- GIS data are also used to inform research on gender equality

Geospatial Usage

To date, geospatial data and information have been used to inform cutting-edge research and analysis on gender equality and women's empowerment, and in particular, for measuring intersecting inequalities, women's economic empowerment and extreme forms of violence against women. Other activities, to promote the use of geospatial information, are led by the CEGS, which include establishing an expert network on gender and GIS to promote knowledge sharing and exchange best practices on geospatial and gender analysis and research.

Geospatial Resources

There are no dedicated technical experts working on GIS.

Geospatial Representatives

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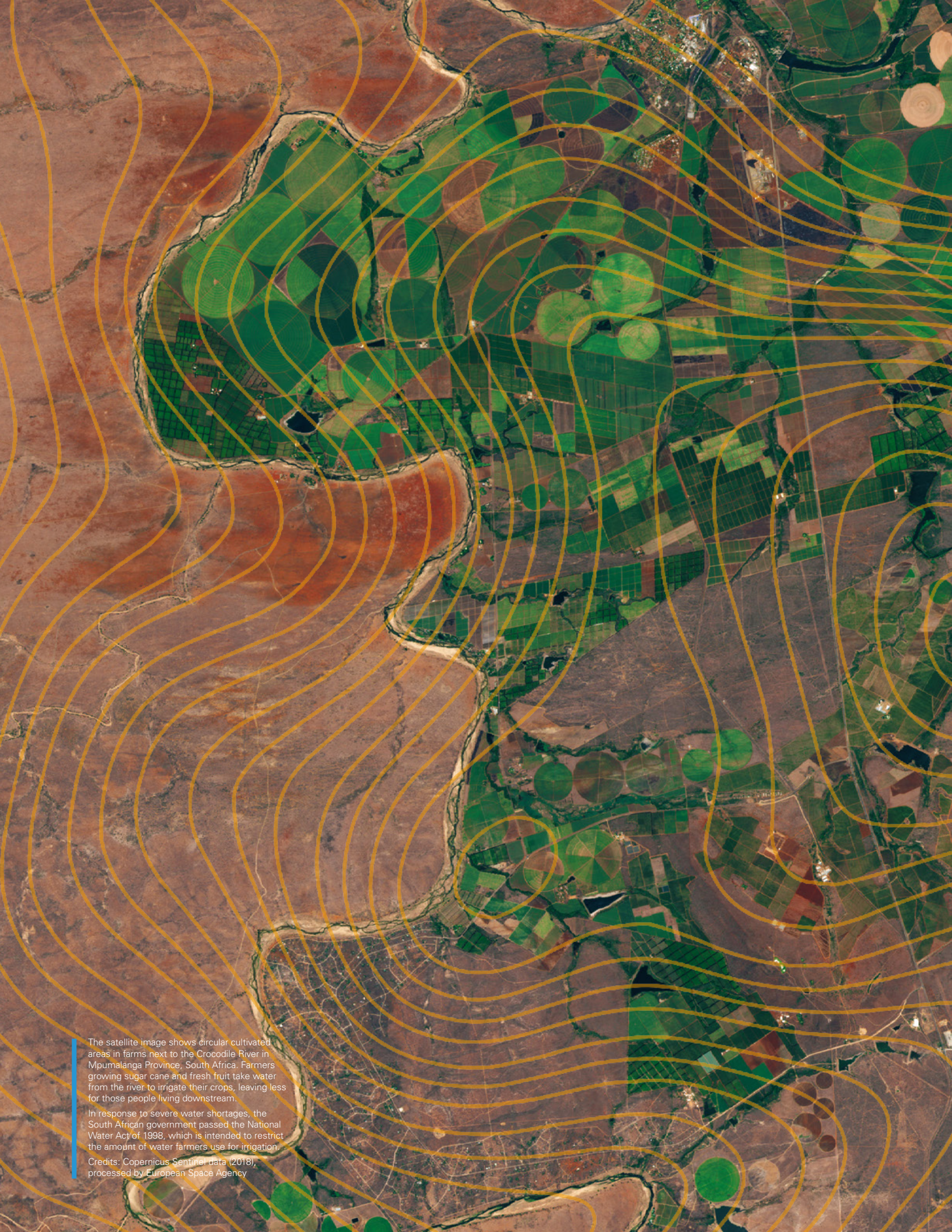
Relevant links

- data.unwomen.org
- https://data.unwomen.org/where-we-work/cegs



The satellite image shows circular cultivated areas in farms next to the Crocodile River in Mpumalanga Province, South Africa. Farmers growing sugar cane and fresh fruit take water from the river to irrigate their crops, leaving less for those people living downstream.

In response to severe water shortages, the South African government passed the National Water Act of 1998, which is intended to restrict the amount of water farmers use for irrigation.

Credits: Copernicus Sentinel data (2018), processed by European Space Agency

SPECIALIZED AGENCIES

"The United Nations specialized agencies are autonomous organizations working with the United Nations. All were brought into relationship with the United Nations through negotiated agreements. Some existed before the First World War. Some were associated with the League of Nations. Others were created almost simultaneously with the United Nations. Others were created by the United Nations to meet emerging needs."

Food and Agriculture Organization (FAO)

Geospatial Activities

FAO is an intergovernmental organization with 194 Member Nations, two associate members and one-member organization, the European Union. FAO's staff capacity allows it to support improved governance inter alia, generate, develop and adapt geospatial existing tools and guidelines and provide targeted capcity enhancement as a resource to country and regional level FAO offices. Headquartered in Rome, Italy, FAO is present in over 130 countries.

FAO's activities comprise five main areas:1) Putting information within reach and supporting the transition to sustainable agriculture; 2) Strengthening political will and sharing policy expertise; 3) Bolstering public-private collaboration to improve smallholder agriculture; 4) Bringing knowledge to the field and 5) Supporting countries prevent and mitigate risks.

Geospatial Data

There are a number of geo-referenced information systems and databases across the FAO departments/ divisions and a number of information portals and databases that report on Agriculture, Rural Development and Food Security at FAO that provide information, both spatial and non-spatial.

FAO's geospatial products and support are delivered by a number of specialized technical teams through extra budgetary projects and regular program activities. FAO is responsible for supporting member countries in their efforts to generate better locally or nationally owned data and information for national policy formulation and decision making. FAO also generates and hosts a number of global FAO datasets, which serve general public, international organizations, government agencies, research institutions, academia and non-governmental organizations.

FAO's geospatial analytical capacities, modelling frameworks, tools and systems for monitoring and forecasting are world-renowned and information from the array of systems developed to date is widely acknowledged as ground-breaking in their extent and innovative nature. The development of FAO geospatial capabilities requires close collaboration between geospatial, statistical, technical unit and IT capacities.

FAO continues to lead the development and revision of the LCCS land cover classification system (LCML). LCCS is an ISO standards developed by FAO. LCCS/LCML is an ontology-based system, a common global standard that allows flexibility to accommodate individual country mapping requirements.

GLC-SHARE is a global land cover flagship dataset produced by FAO which is built by compiling the best data available at national level jointly with satellite and ancillary data. GLC-SHARE is the most reliable global dataset currently available, offering the best overall accuracy. The FAO Geonetwork improves access to and integrated use of spatial data and information. GeoNetwork open source allows to easily share geographically referenced thematic information between different organizations

From an architecture and governance point of view, the FAO geospatial information framework includes Spatial Data Infrastructure (SDI) for geospatial data storage and dissemination. The main goals being: (i) to consolidate geospatial assets from across the Organization, (ii) standardize FAO corporate geospatial outputs, (iii) encourage collaboration through good governance and (iv) coordinate the supply / availability of corporate geospatial datasets and resources.

As part of the FAO Hand in Hand Initiative, FAO is using a Geographic Information System (GIS) to collect and analyze all available data from within the organization and other agencies and is bringing geospatial data such as its high-resolution soil, water, forestry, road network, crop areas and crop calendar data. It will also serve as a data repository for country owned geospatial data sets to support member countries' institutional memory and to improve data and information accessibility.

Geospatial Usage

FAO uses Earth observation and thematic data to support its mission objectives. These data comprise time series of a wide array of satellite data including MODIS, SPOT, Landsat, the Sentinels (1, 2, 3 and 5), as well as high-resolution commercial data.

Geospatial Resources

The Geospatial Unit of FAO resides in the Land and Water Division, comprised of 3 Staff and 10 Consultants. Geospatial IT applications are widely adopted in different sub-disciplines of agriculture, forestry and fishery in FAO. Besides Geospatial Unit, there are geospatial professionals and specialists in Forestry, Fishery, Agriculture, and Economy Departments, as well as the IT Division, Chief Statistician Office, regional and country offices. There are more than 20 staff and 50 consultants.

Geospatial Representatives

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Alternate:

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Relevant links

- http://www.fao.org/geospatial/en/
- http://www.fao.org/nr/gaez/en/

International Civil Aviation Organization (ICAO)

Geospatial Activities

The International Civil Aviation Organization (ICAO) is a UN specialized agency with headquarters in Montreal, Canada and seven regional offices around the world (Bangkok, Cairo, Dakar, Lima, Mexico, Nairobi, and Paris). It was established by Member States in 1944 to manage the administration and governance of the Convention on International Civil Aviation (commonly referred to as the "Chicago Convention").

ICAO serves as the global forum of States for international civil aviation. It develops global Standards and Recommended Practices (SARPs), including guidance material, conducts safety oversight and compliance audits, performs studies and analyses of the air transport market, provides technical assistance to Member States, and builds aviation capacity through many other activities and the cooperation of its Member States and stakeholders.

ICAO maintains several geospatial datasets related to aviation including, but not limited to list of airports for international civil aviation (location indicators); airport safety characteristics; airspace delineation; aviation routes; and the five Letter Name Codes for the identification of significant points and designators for ATS routes.

ICAO maintains an aeronautical geographic information systems function within the Air Navigation Bureau (ANB) which deals with requests for maps and other geospatial services including: regional air navigation plans; crisis response/contingency maps for situations affecting or involving civil aviation; geospatial analysis (e.g. growth of air traffic, estimation of emissions based on known traffic schedules, and performance measurements of regional and global civil aviation).

Geospatial Data

Examples of ICAO's geospatial datasets include:

- Global database of airport location indicators (Doc 7910)
- International Codes and Routes Designators (ICARD) database
- Global aviation safety datasets provided via the Integrated Safety Trend Analysis and Reporting System (iSTARS)
- Electronic Filing of Differences (EFOD) provides a global list of deviations from international regulations
- Geospatial Usage
- Global terrain and obstacle database
- Satellite imagery
- Global cultural datasets (including cities, population, rivers, national boundaries, etc.)

Geospatial Resources

One full-time GIS expert, one part-time assistant

ArcGIS tools, Google Earth

Geospatial Representatives

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Relevant links

- www.icao.int
- www.icao.int/safety/iStars
- http://gis.icao.int

International Fund for Agricultural Development (IFAD)

The International Fund for Agricultural Development (IFAD) is an international financial institution and a specialised agency of the United Nations based in Rome, Italy. It invests in rural people, empowering them to increase their food security, improve the nutrition of their families and increase their incomes. Since 1978, IFAD has provided over US$21 billion in grants and low-interest loans to projects that have reached about 491 million people.

Geospatial Activities

IFAD uses geospatial methodologies, tools, and data to support decision making in the formulation of its country strategies and throughout its project investment cycle. Geospatial applications also form a cornerstone of IFAD's Information and Communications Technologies (ICT) for Development strategy that aims to expand the impact of IFAD's operations.

GIS systems architecture: IFAD's enterprise GIS is designed to inform decision making and streamline spatial considerations into IFAD's project portfolio. The GIS platform is developed and maintained by the ICT division, uses the free and open source technologies QGIS, PostgreSQL/PostGIS, GeoServer, Geonode and OpenLayers and is fully integrated with IFAD's other internal systems as well as external systems such as the International Aid Transparency Initiative (IATI).

IFAD uses GeoNode, an open-source geospatial content management system, as its repository to store and visualise geospatial data. A tailored-build application called "Country pages" acts as a one-stop-shop for any country and project specific data.

Various analytical platforms, languages and tools are used, including Python, JavaScript and R, Google Earth Engine, Google Earth Web. ESRI ArcGIS is used to create project maps and ESRI ArcGIS StoryMaps is used for storytelling.

Innovation: IFAD is currently strengthening its internal GIS capacities and is:

- Developing an IT application compiling freely available datasets on a wide range of themes (e.g. demographics, poverty, land cover) from National Aeronautics and Space Administration (NASA), the European Commission's Joint Research Centre (JRC) and other sources
- Establishing a systematic approach to collect GPS coordinates for the monitoring and evaluation of IFAD project sites
- Collecting geospatial data on Indigenous Peoples and local communities land

Geospatial Data

IFAD uses various sets of project-related geospatial data:

- Project boundaries. The project area of each IFAD-funded project is defined and inserted into the enterprise spatial database. All project locations along with project data are reported to IATI.
- Project interventions. IFAD is scaling-up the collection of georeferenced data on activities and sites of its funded projects. The geodata collected includes locations of infrastructure, areas under improved management and rehabilitated roads.
- Standardized spatial country profiles with various sets of external data from more than 130 global, regional and thematic data sources.

Geospatial Usage

IFAD uses GIS and Earth Observation throughout its project cycle:

Design of country strategies and projects: A range of GIS tools and datasets are used to generate knowledge products (e.g. maps and graphs) on various themes (e.g. demographics, poverty, climate, land cover). These inform design teams about spatial questions related to targeting, natural resources or climate. In many cases detailed climate analysis and vulnerability assessments are carried out.

Project implementation: A number of IFAD-funded projects use GIS for spatial planning (e.g. reforestation activities), to identify vulnerable groups and areas, and/or monitor project activities. IFAD also provides grants to GIS service providers to train project staff and conduct GIS assessments.

Impact assessments: IFAD uses georeferenced data from its project target and comparison groups to conduct rigorous impact assessments. GIS supports sampling as well as matching of treatment and control groups during analysis. Remote sensing datasets (on climate, population, land cover, accessibility and infrastructures) can also be drawn upon to better assess project impacts.

Geospatial Resources

Human resources: IFAD has 8 GIS experts. Core management is based in IFAD headquarters and additional services are delivered through external consultants, institutions, and vendors.

Community of practice: IFAD has an active community of practice called GeoGroup with 10–15 active members from various departments. The group streamlines the usage of geospatial tools, methods and data into IFAD operations, and aims to bundle expertise, better coordinate efforts and capture in-house experiences.

Partnerships: IFAD has a longstanding partnership with WFP, called the "WFP-IFAD Joint Climate Analysis Partnership". IFAD also benefits from programmes of the European Space Agency, such as the Earth Observation for Sustainable Development (EO4SD) and the EO Clinic. IFAD also successfully partners with universities and benefits from their internship programmes.

Geospatial Representatives

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Relevant links

- https://www.ifad.org/

International Labour Organization (ILO)

Geospatial Activities

The International Labour Organization (ILO) was founded in 1919, in the wake of a destructive war, to pursue a vision based on the premise that universal, lasting peace can be established only if it is based on social justice. The ILO became the first specialized agency of the United Nations in 1946.

The main aims of the ILO are to promote rights at work, encourage decent employment opportunities, enhance social protection and strengthen dialogue on work-related issues.

The only tripartite U.N. agency, since 1919 the ILO brings together governments, employers and workers of 187 member States , to set labour standards, develop policies and devise programmes promoting decent work for all women and men.

Geospatial activities in the ILO are limited to dissemination of georeferenced information in reports and dashboards, as well as assistance to member countries for the preparation of thematic maps.

Geospatial Data

Labour statistics play an essential role in the efforts of Member States to achieve decent work for all and for the ILO's support of these efforts. These statistics are needed for the development and evaluation of policies towards this goal and for assessing progress towards decent work. ILOSTAT, the ILO's central portal for labour statistics, contains relevant, timely and comparable labour statistics from more than 200 countries and regions of the world. The ILO also compiles and makes available Legal Databases comprising labour laws, standards and policies from all member countries. These resources are often georeferenced and disseminated in reports, dynamic web pages and dashboards.

Finally, yet importantly, different departments and offices collect multiple quality and impact indicators from programmes and projects around the world. For example, as an effort to increase transparency, ILO has launched several dashboards that present information about ILO's development cooperation spending across the globe (DC Dashboard), evaluation process (ieval Discovery) and results achieved (IR Dashboard).

Geospatial Usage

Geospatial information systems are not used intensively, except for the dissemination of maps and dashboards (see above). In certain regional and country offices, ILO works with local governments to disseminate information through geospatial mapping of activities. Currently, country offices/departments have utilized geospatial data available through various open source systems.

The ILO has recently reviewed the policy and is in the process of setting up a Geospatial Services Hub to provide access to geospatial data (cartography and georeferenced information) to internal users, in addition to basic mapping packages used for dissemination of statistics (see above).

One of the main goals for this new service is to provide an official map for inclusion in all official publications of ILO, both internal and external. This official map will be the based on the latest version of the UN global cartography.

Geospatial Resources

The ILO does not have any resources allocated specifically to geospatial information management. Nevertheless, the chiefs of Knowledge Management Solutions Unit (STATISTICS) and Data Integration Unit (INFOTEC) are leading the implementation of a Geospatial Services Hub and representing the ILO in the UN Geospatial Network. Besides, many specialists in HQ and field offices spend some time in the design and building of choropleths and other map-based visualizations.

Field offices also provide assistance to member countries in systematizing georeferencing information for the production of reports.

Geospatial Representatives

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Relevant links

- https://www.ilo.org
- https://ilostat.ilo.org

International Telecommunication Union (ITU)

Geospatial Activities

The International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technologies (ICTs). ITU allocates global radio spectrum and satellite orbits, develops the technical standards that ensure networks and technologies seamlessly interconnect, and strives to improve access to ICTs to underserved communities worldwide. The ITU Secretariat is composed of a General Secretariat and three bureaux: Radiocommunication Bureau (BR); Development Bureau (BDT); and the Standardization Bureau (TSB).

The ITU does not currently have a geospatial section/ department. However, several staff in ITU, from different bureaux, deal with geospatial data, both as developers and users.

Recognizing the importance of Geospatial Information Management, the ITU set-up an inter-sectorial team in May 2019 under the supervision of the ITU Deputy Secretary General. The ITU team, involved in several cooperation with geospatial players (i.e. United Nations Geospatial Network, the World Geospatial Industry Council and the Open Geospatial Consortium) aims to leverage the strategic role of geospatial data for efficient development of telecommunication infrastructure and systems in order to promote the ITU mission.

Geospatial Data

- Radio-meteorological data collected from the Membership, via the ITU-R Study Group 3. These datasets are needed for the development and use of radio wave propagation prediction methods
- ITU Digitized World Map (IDWM), the geodatabase (binary format) containing geographical data, geopolitical data and radio-meteorological data, and CIRAF zones, propagation zones and maritime zones as defined in the ITU-R Recommendations and Radio RegulationsTerrain models (SRTM3, SRTM1, etc.) and surface features (radio clutter)
- ITU Broadband Capacity Indicators from the Broadband map, containing fibre and microwave pathways, node (access points), population within reach of a node; satellite earth stations (BR data).

Geospatial Usage

The ITU uses geospatial data and services in order to:

- Provide relevant data and services for the BR internal processing systems to perform accurate technical examinations in order to ensure interference-free operations of radiocommunication systems.
- Provide software tools (both online and standalone) to assist the Membership in their frequency planning activities in order to comply with the ITU Radio Regulations and Regional Agreements: a) IDWM geospatial function library, providing programmatic access to the IDWM binary data (proprietary format); b) services consuming elevation data (effective height calculation using SRTM); c) technical analyses software modules using GIS functionalities; and d) GIS displays for various standalone and web applications.
- Assist in the development of ICT standards[1] that may include the use or transport of geospatial data:
  - Recommendation ITU-T Q.3615 (2015) "Protocol for GeoSMS" standardizes the communication of location information between various location-based services (LBSs) over short message service (SMS)
  - Recommendation ITU-T H.460.25 (2010) "Transport of geographic information in ITU-T H.323 systems" defines a means of transmitting geographic information amongst ITU-T H.323 multimedia communication entities

1. A complete list of relevant ITU-T Recommendations and Reports is available here.

- A family of E.164 Recommendations "The international public telecommunication numbering plan" provide the number structure for international public telecommunication: geographic areas, global services, Networks, groups of countries (GoC) and resources for trials. In particular, E.164 specifies network identification information, service parameters, calling/connected line identity, dialling procedures and addressing for geographic-based ISDN calls
- ITU-T Technical Report TR.CLE (06/2020) "Identify call location for emergency service" provides guidance on provision of the different technologies to identify the call location of fixed and mobile devices for emergency services. Such information can save vital seconds for first responders and reduce mortality due to the lack of timely arrival of emergency services.

- Provide information to countries using maps on various subjects, such as spectrum management software, telecommunication transmission backbones, broadband networks, digital broadcasting transition, telecommunication indicators and ITU project implementation.
  - SMS4DC, the Spectrum Management System for Developing Countries, which is using maps for displaying the results, terrain data for calculations and graphical interface for entering data
  - Digital Terrestrial Television transition (DSO database)
  - The Interactive Transmission Maps display the transmission lines, nodes and satellite earth stations and also the broadband map
  - Usage of maps to display the following information:
    - Global Network Resiliency Platform (#REG4COVID)
    - Multitude of events around the globe celebrating International Girls in ICT Day and ITU's online gender dashboard
  - Project implementation (ICTs for sustainable development) at the regional and national levels, such as GIGA, PRIDA, and FIGI (ICT Infrastructure map for Mexico)
  - Collection and dissemination of ICT statistics to countries

Geospatial Resources

Around 15 staff, including software developers, deal part-time (less than 20 per cent of their time) with geospatial data and services in the ITU.

Geospatial development activities are undertaken in the ITU by a Geospatial Task Force comprising staff from all sectors which was set up in order to harmonize GIS activities in terms of geospatial knowledge sharing, data and software tool harmonization.

Geospatial Representatives

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Relevant links

- https://www.itu.int/

United Nations Educational, Scientific and Cultural Organization (UNESCO)

Geospatial Activities

Created on 16 November 1945, the United Nations Educational, Scientific and Cultural Organization (UNESCO) is the United Nations' organization for education, the sciences and culture. Its Constitution, drafted in the aftermath of World War II, opens with the following words, a road map for the Organization, "Since wars begin in the minds of men, it is in the minds of men that the defences of peace must be constructed". More than 70 years after UNESCO's foundation, this vision of peace remains deeply relevant. It is moreover an essential condition for achieving sustainable development.

UNESCO fosters dialogue and mutual understanding between peoples through education, the sharing of different cultures, and the free circulation of ideas and knowledge. To support its action, UNESCO comprises 193 Member States and 11 Associate Members.

Because of its complex mandate, UNESCO operates in multiple areas of geospatial activity, in relation to education, culture, sciences, freedom of expression and access to information. As of today, 10 million square kilometres of the Earth's surface are now protected by UNESCO designated sites such as Biosphere Reserves, Global Geoparks and World Heritage sites, and thousands of items inscribed in lists are geo-localized.

For example, some of the activities within the culture sector involve satellite monitoring of World Heritage properties to monitor World Heritage sites, to allow local authorities to identify potential threats, such as land use changes, which could place the sites in danger, and thereby provides sufficient time for authorities to develop and implement mitigation strategies.

Another important ongoing project dedicated to the collection of geographical information is the International Hydrological Programme (IHP) Water Information Network System (WINS) online platform, an open-access online library and networking hub. For water, the UNESCO Intergovernmental Oceanographic Commission Tsunami Program also maintains the Tsunami Early Warning Systems (EWS).

Furthermore, UNESCO recently joined forces with the European Union (EU) community of scientists and practitioners to develop innovative solutions for strengthening resilience, via the development of several ICT platforms. These platforms include the OPERANDUM Geospatial Information Knowledge Platform (GeoIKP), the RURITAGE rural landscape mapping tool which aims to prove a comprehensive representation of human-landscape interactions, and the I-REACT project, that implements a multi-hazard system with a focus on major climate-induced natural hazards such as floods, fires and extreme weather events.

Geospatial Data

While UNESCO applies and endorses open data policies whenever possible, it does not yet provide a single place where all geospatial-related data can be accessed. Each single project provides its own data access policy

This is the case of the Landslide-EVO (Environmental Virtual Observatory) project, an international collaborative research initiative that utilizes citizen science and advanced low-cost ICTs to develop a demand-responsive framework for landslide disaster risk reduction in the Karnali River Basin of Western Nepal. This initiative has developed participatory methods for augmenting geospatial hydrometeorological datasets in the mountains.

The World Network of Biosphere Reserves has the georeferenced data of all biosphere reserves and the Ibero-American and Caribbean Biosphere Reserves Network (IberoMAB) has the shapefiles of all their affiliated biosphere reserves. The same information is available for the 147 UNESCO Global Geoparks items.

Some other UNESCO initiatives neither collect nor publish their own georeferenced data since geospatial data is often provided by national authorities with restrictions In the field of education, for example, geospatial data on schools comes mainly from the national education statistics surveys and the UNESCO Institute of Statistics; cartographic and spatial data layers are obtained either free of charge (offered by Esri in the case of Benin, Côte d´Ivoire) or from free database platforms (UP42); and georeferenced educational data is made available at national level and on different platforms such as the OCHA Humanitarian Data Exchange, ACLED, IOM-DTM, USGS, NASA, UNEP.

Geospatial Usage

UNESCO makes use of geospatial data in a number of different areas. For education, for example, geospatial information is used at the International Institute for Educational Planning for micro-planning and school mapping in Member States, for risk and vulnerability analyses in crisis-sensitive planning, and for supporting policy dialogue, including between host and refugee communities.

For culture, geospatial information is part of daily monitoring activities, such as UNITAR's UNOSAT programme that has been supporting the humanitarian community with analysis derived from satellite imagery. This is also helping the work UNESCO carries out in Syria and the Middle East region, including efforts to report looting of cultural artefacts. The World Heritage Committee has called upon States Parties to use satellite imagery to monitor the state of conservation of World Heritage properties, for example in Chersonese (Ukraine), in Giza (Egypt), in Dong Phayayen-Khao Yai (Thailand), and in the Tropical Rainforest Heritage of Sumatra (Indonesia).

Geospatial Representatives

Representative:

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Relevant links

- Main UNESCO website
- Intergovernmental Oceanographic Commission Tsunami Program
- IHP Water Information Network System (WINS) online platform

World Health Organization (WHO)

Geospatial Activities

Location is a crucial element in health data and leveraging geospatial information to support global health programmes has proved beneficial for the World Health Organization (WHO). Earliest geospatial activities by WHO focused on the development of tools, such as HealthMapper, widely adopted by Ministries of Health used for disease surveillance in the 1990s. Geospatial data and techniques can be effectively used to monitor progress and provide a strong basis for policymaking for SDGs and to deliver the GPW13 Triple Billion targets. Several SDGs rely on GIS technologies: for example, analysing spatial distribution and patterns for tracking risk factors, controlling diseases, by monitoring water quality and sanitation for different areas, monitoring of Polio vaccination campaigns, malaria, health emergencies, neglected tropical diseases, antimicrobial resistance, and health facility mapping and strengthening data and health information systems (SDG 3, 6, 13, 16).

To reach the most vulnerable first, GIS can detect social and economic inequalities within and across countries. It can connect maps, apps, data and people in ways that will help countries and partners to make more informed and faster decisions, extending the reach of geospatial information across the Organization.

WHO is positioned to provide coherent, comprehensive and collaborative solutions to countries and partners through:

- Increasing the efficient use of GIS by Member States and partners
- Improving compliance and stewardship with WHO Standard Operating Procedures for maps and Web GIS applications
- Promoting a "geospatial" culture and community of practice by offering training and technical expertise in innovative technology, application methods, and mapping for continuous planning, monitoring, delivering solutions
- Strengthening country and regional data, analytics and health information system capacity to meet demands and maximize gains in population health
- Augmenting timely assistance and expertise through a network of UN agencies and trusted geospatial partners to use innovations in research, technology, best practices

Geospatial Data

WHO had the leading role on the development of the United Nations Second Administrative Level Boundaries (SALB) programme for over a decade. Currently, WHO maintains significant geospatial assets for administrative boundaries, population, and health administrative units.

WHO has created base maps, with geo-names and boundaries that are consistent with WHO legal guidance. These cloud-hosted base maps are available for incorporation in WHO's web and mobile GIS applications, in several vector tile format styles, and for all six official United Nations languages.

Specific health datasets with patient information (including location) are maintained on servers at WHO, and the geospatial data management associated with this data adheres to privacy policies for handling of patient data. Other operational datasets and satellite imagery are hosted and maintained in the cloud-based Enterprise GIS platform of WHO (https://who.maps.arcgis.com) and some are available as open data.

Geospatial Usage

During the recent reform process at WHO, the need for improved access to geographic information systems (GIS) technology was highlighted by internal staff. This was realized with the Enterprise GIS implementation

and now most country offices and all regional offices are utilizing GIS in their work. The Africa Regional Office has even established a regional GIS centre. The use of online GIS technology now engages over 2,000 WHO staff and partners in health programmes. Desktop GIS usage has reached over 1,000 WHO staff during the last few years and capacity building is an ongoing effort to support staff.

Geospatial information is critical during health emergencies and is widely utilized by the WHO Health Emergencies (WHE) unit for situation dashboards, analysis, and rapid assessments. It has been a key technology for analysis of the Zika, Ebola, and most recently COVID-19 outbreaks. Geospatial enabled workflow include field data collection, dashboards, data analysis, geospatial data management, open data sharing practices, configuration of web app templates and collaboration with relevant partners.

Geospatial Resources

People: WHO staff with significant geospatial information management, application development, and/or analysis skills are located throughout WHO- with notable clusters on polio, health emergencies, liformation management and technology, and data, analytics, and impact for delivery units. Each country and regional office also has a focal point for Geospatial Information Systems (GIS).

Technology: The WHO Enterprise GIS is built on the ArcGIS platform, including geospatial tools such as ArcGIS Online, ArcGIS Desktop – including ArcGIS Pro, ArcGIS Enterprise integrated with Postgres SQL/SQLServer and Image Server, ArcGIS Hub and Open Data, plus deployment of configurable applications such as Survey123, StoryMaps, Web AppBuilder, and ArcGIS Maps for PowerBI, Kobo Toolbox, Tableau, PowerBI, etc.

Process: Standard operating procedures have been established for mapping of disputed areas, and for developing maps in general.

The GIS Hub of WHO incorporates the geospatial resources needed by the community of practice across WHO:

- WHO health boundaries
- Population datasets
- SOP for map (per WHO legal guidance)
- WHO base maps
- Country overview maps
- Training and staff development plan

These geospatial resources support the people, technology, and processes of the WHO Enterprise GIS and enhance the rich geospatial landscape of the World Health Organization.

Geospatial Representatives

Representative:

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Relevant links

- GIS Hub: https://gis-who.hub.arcgis.com/
- Health Emergencies Dashboard: https://extranet.who.int/publicemergency
- Malaria: https://apps.who.int/malaria/maps/threats/
- Polio: http://polioeradication.org/news-post/innovation-series-technology-is-helping-to-ensure-polio-workers-are-where-they-are-most-needed/
- COVID19 public dashboard - https://covid19.who.int/

World Meteorological Organization (WMO)

The World Meteorological Organization (WMO) is an intergovernmental organization of 193 Member States and Territories and is the specialised agency of the United Nations for meteorology (weather and climate), operational hydrology and related geophysical sciences. WMO's mission is to facilitate worldwide cooperation on monitoring and predicting changes in weather, climate, water and other environmental conditions through the exchange of data, information and services, standardization, application, research and training.

Geospatial Activities

A cornerstone activity in achieving WMO's mission is the World Weather Watch (WWW) Programme which facilitates the development, operation and enhancement of worldwide systems for observing and exchanging meteorological and related observations. It also generates and disseminates analyses and forecast products, as well as severe weather advisories and warnings, and related operational information. The activities carried out under this Programme ensure that Members have access to the required information that enables them to provide data, prediction and information services and products to users.

The three core elements of the World Weather Watch are the Global Observing System (GOS), the Global Telecommunications System (GTS) and the Global Data-processing and Forecasting System (GDPFS). Several support programmes coordinate, integrate and operate the three core components under the governance and management of the relevant Technical Commissions.

The World Meteorological Organization also co-sponsors the Global Climate Observing System (GCOS). GCOS expert panels maintain definitions of Essential Climate Variables (ECVs), many of which are geospatial, and are required to systematically observe Earth's changing climate, underpinning climate research and services and adaptation measures.

Geospatial Data

Whilst WMO Secretariat facilitates the free exchange of data and information to support the World Weather Watch (WWW), the infrastructure, systems and facilities needed for the provision of these services is owned, implemented and operated by Member States and Territories, involving a number of structures and consortia dealing with specific contexts and systems. The WMO Secretariat makes certain related observation and forecast products, data and metadata available (see relevant links).

WMO

Geospatial Usage

WMO monitors and analyses the coverage and conditions of the core elements of the World Weather Watch programme described above.

Geospatial Resources

The World Meteorological Organization includes 2 geospatial information managers at headquarters for around hundred power users.

Geospatial Representatives

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- Ms Laura Paterson (New York Liaison), lpaterson@wmo.int

Relevant links

- World Meteorological Organization Strategic Plan 2020-2023- https://library.wmo.int/doc_num.php?explnum_id=9939
- World Weather Watch Programme-https://public.wmo.int/en/programmes/world-weather-watch
- WMO Information System- https://www.wmo.int/wis
- WMO Observing Systems Capability Analysis and Review Tool- https://oscar.wmo.int/surface
- WIGOS Data Quality Monitoring System- https://wdqms.wmo.int
- WMO Catalogue for Climate Data- https://climatedata-catalogue.wmo.int/
- Global Climate Observing System- https://gcos.wmo.int/en/home

World Bank Group

Geospatial Activities

Established in 1944, the World Bank Group is an international financial institution with 189 member countries and a U.N. Specialized agency headquartered in Washington, D.C. with more than 10,000 employees from over 170 countries and located in more than 130 offices worldwide. Our mission is to achieve the twin goals of ending extreme poverty and building shared prosperity.

Geospatial activities strengthen the portfolio across organizational sectors and comprise five key areas:

1. Operations with financial products and services, including geospatial infrastructure investments and project-based activities in client countries;
2. Policy advice and innovative knowledge sharing through advisory services and analytics that include economic analyses, diagnostics tools and reports, and direct technical assistance;
3. Strategic partnerships in both the private sector and public sector to enhance client solutions; for example, our partnership with UNSD, which led to the concept and development of the Integrated Geospatial Information Framework to guide countries in the development and management of their geospatial information resources;
4. Global research and standards along with the production of data, tools and maps that inform operations and socio-economic analysis coupled with advancements in technology, such as the management of centralized geo portals, interactive maps of the portfolio, dashboards, and databases; and
5. Training, capacity building, and dissemination of geospatial knowledge products activities, including workshops, tools and a centralized geospatial learning hub to promote growth in geospatial skills, literacy and knowledge.

Geospatial Data

The Development Data Hub (DDH) provides curation, storage and dissemination of development-relevant datasets including geospatial, micro-data, time-series and other data types.

Geospatial Usage

The World Bank exhibits a wide and growing use of geospatial data, tools and applications. Established over three years ago, the Geospatial Community of Practice has now over 600 members across the Headquarters (HQ) and country offices (CO). At least 400 HQ and 135 CO employees use GIS software.

Geospatial activities take place throughout the organization in all sectors, including Global Practices (Sector teams), Cross-Cutting Solutions Areas (such as Fragility, Conflict and Violence affected states), regions, and functions. Examples of teams with geospatial activities are mentioned below as part of a larger community covering a range of topics including, but not limited to poverty and infrastructure mapping, territorial development, agriculture, land administration, urban development, transport, environment and multi-regional economic analyses.

WORLD BANK

Geospatial Resources

The Global Practice on Urban, Rural and Land (GPURL) leads direct assistance to governments seeking to invest in infrastructure and capacity related to geospatial data and natural resource management.

The Geospatial Operational Support Team (GOST) helps governments and World Bank task teams apply spatial data and insight to lending design, planning and supervision through direct data acquisition, analysis and training of staff and counterparts. Internally, GOST coordinates geospatial data acquisition to reduce costs for internal and external teams, invests in open data and tools, and curates geospatial data in DDH.

Survey Solutions is a data collection and survey management system with rich capabilities for diverse CAPI, CAWI, CATI and mixed mode surveys. Along with standard question types, it can capture the locations from internal or external sources or from an interactive feature for marking locations, paths and polygons on a preloaded map(s). The interviewer can use locations of interviews with Google maps and routing (connection required) as part of navigation, while supervisory staff can access a map report including all locations of interviews.

The Geo-Enabling initiative for Monitoring and Supervision (GEMS) aims to enhance the transparency and accountability of development interventions by building capacity among clients and partners in the collection and real-time analysis of granular geo-tagged field data related to project activities.

The Spatial Agent app and other resources from the Disruptive KIDS (Knowledge, Information & Data Services) Helpdesk provides customized platforms of shared public-domain evidence base for planning and policy making with spatial data visualizations.

The Information and Technology Solutions Geospatial team manages the GeoLab with the Disruptive KIDS and provides geospatial IT solutions such as licenses with ESRI, Mapbox, and also publishing, integrating and maintaining maps.worldbank.org along with an internal Geospatial Platform.

The Cartography Unit creates official maps for reports and publications and is responsible for ensuring that all maps follow official World Bank cartographic guidelines. It maintains international and subnational boundaries' datasets and the official World Bank basemap.

Geospatial Representatives

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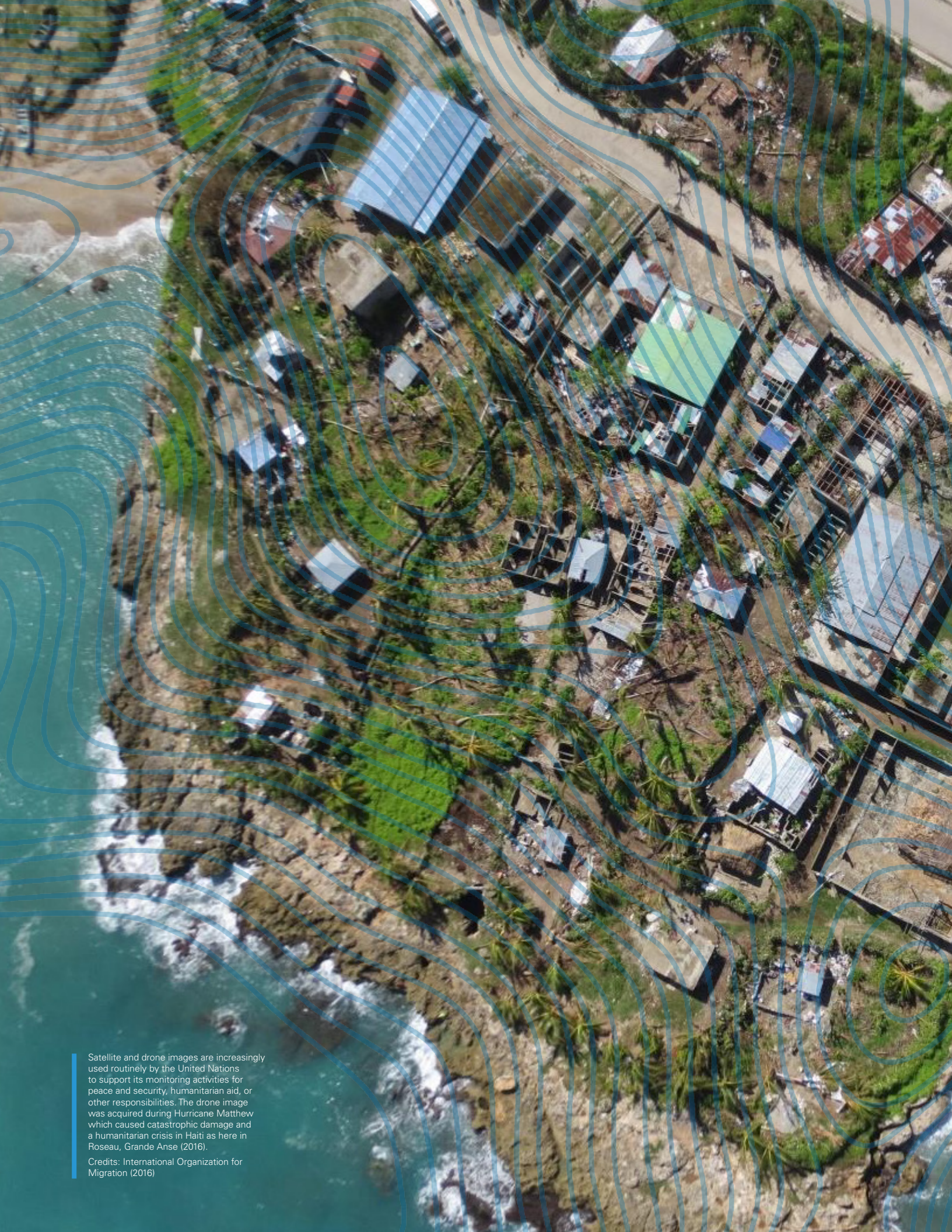
Relevant links

- https://data.worldbank.org and https://maps.worldbank.org



Satellite and drone images are increasingly used routinely by the United Nations to support its monitoring activities for peace and security, humanitarian aid, or other responsibilities. The drone image was acquired during Hurricane Matthew which caused catastrophic damage and a humanitarian crisis in Haiti as here in Roseau, Grande Anse (2016).

Credits: International Organization for Migration (2016)

OTHER RELATED ORGANIZATIONS

"The term "Related Organization" has to be understood as a default expression, describing organizations whose cooperation agreement with the United Nations has many points in common with that of Specialized Agencies, but does not refer to Article 57 and 63 of the United Nations Charter, relevant to Specialized Agencies. Nonetheless, these organizations are part and parcel of the work of the United Nations."

International Atomic Energy Agency (IAEA)

Geospatial Activities

The International Atomic Energy Agency (IAEA) works to promote the safe, secure and peaceful use of nuclear technologies. As part of its mission, the IAEA is mandated to independently verify that nuclear facilities are not mis-used and that nuclear material is not diverted from peaceful uses. Geospatial activities play an important role in the fulfilment of this mandate.

In the early 1990s, as a consequence of the discovery of Iraq's clandestine nuclear weapons programme and North Korea's noncompliance with its safeguards obligations, IAEA Member States requested that the IAEA strengthen its ability to detect undeclared nuclear material and activities. Since then, the IAEA has steadily developed its capability to collect and analyse information available from open sources, including satellite imagery. Together with the information resulting from other safeguarding activities, particularly in the field, this information contributes to IAEA's assessment of the correctness and completeness of the declarations made by national governments.

Commercial satellite imagery enables the IAEA to monitor sites of interest, including those that are difficult to access, for physical or security reasons, or when access is impossible under challenging circumstances.

Commercial satellite imagery is routinely used in the following safeguarding activities:

- To verify the accuracy and completeness of information supplied by governments
- To assist in the planning of in-field and inspection activities, providing inspectors with insights into and an understanding of a facility infrastructure
- To detect changes and monitor activities at nuclear fuel cycle-related sites
- To identify possible undeclared activities

Geospatial Data

- Commercially available and free electro-optical (EO) and synthetic-aperture radar (SAR) satellite imagery
- Geo-tagged photos collected in the field
- Information provided by governments
- Different types of open-source geospatial data including vector data, digital elevation models, raster, 3D models
- Specific geodatabase- Structured Object Management (SOM)
- Web map services, etc.

Geospatial Usage

The IAEA produces geospatial analytical products derived from the analysis of commercial satellite imagery, integrated with all types of relevant information.

The IAEA benefits from the use of unprecedented remote sensing capabilities and technologies/techniques used to process and exploit data collected by an ever-increasing number of remote sensing platforms. These provide higher spatial resolutions, new spectral capabilities and drastic improvements in the 'revisit capabilities'.

Geospatial Resources

The IAEA employs image analysts, geospatial specialists and data scientists to conduct geospatial activities. It has electronic light table software and Geospatial Information Systems (GIS) for the analysis of geospatial data, integration with other types of information and the generation of analytical products, while in-house web-based applications enable secure customized dissemination of geospatial information.

Geospatial Representatives

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Relevant links

- www.iaea.org/about/organizational-structure/department-of-safeguards
- www.iaea.org/publications/factsheets/iaea-safeguards-overview

International Organization for Migration (IOM)

Geospatial Activities

Geospatial analytics is inextricably linked to the field of migration and internal displacement, which are entirely location-based. For this reason, the Displacement Tracking Matrix (DTM) unit under the Department of Operations and Emergencies (DOE) of the International Organization for Migration (IOM) is a permanent consumer of GIS systems and services to systematically collect, manage, analyse, and disseminate geospatial information on mobility patterns across the globe.

DTM is a system used to track and monitor displacement and population mobility, provide critical information to decision-makers and responders during crises, and contribute to a better understanding of population flows. Using geospatial technology, DTM is used across various stages of a humanitarian response, commonly during the emergency phase, to inform planning and assistance and to inform preparedness activities or transition and recovery programming.

Geographic Information Systems' (GIS) tools have a broad range of applications for IOM and DTM in particular, including improving operational efficiency through more informed programmatic planning and implementation using geospatial analytics. This is most evident in humanitarian responses within IOM in which accurate, reliable, and up-to-date data on displacement dynamics have lifesaving consequences. For external partners and audiences, GIS online visualizations often help display key results and indicators on easy-to-read map products.

The Geospatial Analytics team within the DTM unit provides the following services to IOM's DTM operations worldwide:

- Assist global IOM operations by contributing to the design, development, and maintenance of relevant geospatial data infrastructure and geodatabases to ensure the effective use of geographic information systems.
- Ensure that common geospatial data standards and structures are applied, and data are managed properly throughout the data management cycle, including through support in the data collection processes, analysis and overall data management activities.
- Coordinate, design and maintain the Central Data Warehouse (CDW) to ensure smooth dataflow to geoportals, databases, applications, and other GIS solutions. The CDW is a core component of global DTM systems and infrastructure that supports quality, harmonization and consolidation of data from operations worldwide.
- Support implementation of remote sensing and satellite imagery, artificial intelligence (AI) and machine learning in coordination with other humanitarian actors, by putting in place a methodology and infrastructure to utilize Unmanned Aerial Vehicles (UAV) for rapid response, risk reduction and planning in places without maps or in inaccessible locations.
- In light of the COVID-19 pandemic, the Geospatial Analytics team has contributed to the global mobility database and online platform to support geospatial visualization of COVID-19 impacts on human mobility, across global, regional and country levels.

Geospatial Data

One of IOM's most important data initiatives is the Displacement Tracking Matrix, which monitors displacement and population mobility, provides critical information to responders during crises, and contributes to a better understanding of population flows through its geospatial global infrastructure.

In 2019, IOM's DTM collected, analysed and disseminated data – including spatial and non-spatial data – on population mobility in 78 countries, tracking the movements of over 24.9 million Internally Displaced Persons (IDPs), 16.5 million IDP returnees and 4.6 million returnees from abroad. With improved geospatial analysis of displacement and flow data, DTM published 1,620 reports and mapping products and received over 620,000 downloads.

In addition, IOM's DTM has added more than one hundred datasets to HDX, covering 30 countries. Half of these datasets include Humanitarian Exchange Language (HXL) tags, which enable faster data processing. IOM's DTM is among the top three data providers among all United Nations organizations on HDX. This is in addition to the to Common Operational Datasets (CODs), datasets to support operations and decision making for all actors in a humanitarian response and is essential for integrating geospatial and statistical information and related analytics.

Geospatial Usage

With more than 6,000 data collectors and over 400 technical experts serving in over 78 countries, the presence of DTM worldwide is immense with a large pool of potential GIS users. Within DTM units, geospatial tasks are conducted by dedicated GIS technicians (those who are explicitly tasked and use GIS in their work) or are shared based on team composition. In cases where a DTM unit does not possess GIS capacity, geospatial service requests are sent to regional or global offices. Conversely, GIS technicians are often deployed from global, regional, or other country offices to support specific emergencies or longer-term capacity building initiatives.

Geospatial Resources

18 GIS officers and 39 Database Officers in the field offices
5 GIS officers and 3 Database Officers in HQ

Geospatial Representatives

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Relevant links

- https://Displacement.iom.int
- https://Migration.iom.int
- https://DTM.iom.int
- https://data.humdata.org/organization/international-organization-for-migration

International Seabed Authority (ISA)

Geospatial Activities

In accordance with the UN Convention on the Law of the Sea ("the Convention") and 1994 Agreement relating to the implementation of Part XI of the Convention ("1994 Agreement"), the International Seabed Authority (ISA) is the organization through which the States Parties to the Convention organize and control mineral exploration and exploitation activities in the Area, particularly with a view to administer the mineral resources of the Area, for the benefit of mankind as a whole.

The Convention defines "the Area" as "the seabed and ocean floor and subsoil thereof, beyond the limits of national jurisdiction". The establishment of the exact geographic limits of the Area depends on the establishment by States of the outer limits of the continental shelf, including the delineation of the outer limits of the continental shelf, where it extends beyond 200 nautical miles from the baselines from which the breadth of the territorial sea is measured, in accordance with the Convention. Pursuant to article 84, paragraph 2 of the Convention, coastal States are obliged to give due publicity to charts or lists of geographical coordinates of points and, in the case of those indicating the outer limit lines of the continental shelf, to deposit a copy of such charts or lists with the Secretary-General of the Authority.[1]

Geospatial Data

Since it was established, the ISA has compiled data and information on marine mineral resources and environmental baseline data acquired from the contractors on their exploration activities. The ISA has entered into 30 contracts: involving 21 contractors, for exploration for polymetallic nodules (18 contracts) in the Clarion-Clipperton Fracture Zone (CCZ), Western Pacific Ocean (WPO) and Central Indian Ocean Basin (CIOB); polymetallic sulphides (7 contracts) in the CIOB; and cobalt-rich ferromanganese crusts (5 contracts) in the WPO and South Atlantic Ocean of the deep seabed.

The contractors are required to submit the metadata and results of their sample analysis from exploration surveys in contract areas, using the digital reporting templates recommended by the Legal and Technical Commission (ISBA/21/LTC/15, Reporting Template: https://www.isa.org.jm/reporting-templates).

Building on ISA's long-term efforts to develop a central repository of data being submitted by contractors from their exploration activities, the ISA launched, in July 2019, its new comprehensive database called "ISA Deep Seabed and Ocean Database" (*DeepData*) (http://data.isa.org.jm). DeepData is an integrated database system designed to serve as a geospatial data management system.

1. See in addition ISBA/25/A/2, paras. 6 and 7 at https://ran-s3.s3.amazonaws.com/isa.org.jm/s3fs-public/files/documents/isba_25_a_2-e.pdf.

The environmental data in DeepData, including biological, physical and geochemical parameters of the marine ecosystems, are accessible to the public. The geological data relating to mineral resource assessment are formally identified as confidential by the regulations on prospecting and exploration of mineral resources, and are made accessible only to authorized users of ISA organs and contractors. (ISBA/19/A/9, ISBA/19/C/17, ISBA/16/A/12/Rev.1, and ISBA/18/A/11).

The contractors are also required to produce Geographic Information System regional maps with high-resolution bathymetry showing major geological and geomorphological features to reflect the heterogeneity of the environment, at a scale appropriate to the resource and habitat variability (ISBA/25/LTC/6). The collected and processed bathymetric data are being submitted as digital 'xyz' files in the American standard code for information interchange (ASCII) format or a common geographic information system (GIS) format. The processing sequence must be fully described (ISBA/21/LTC/15).

Geospatial Usage

The environmental data compiled and contained in DeepData are analysed and synthesized to support ISA's process of developing regional environmental management plans (REMPs) and reviewing the existing REMP. They will also support the assessment of environmental impacts from the activities in the Area.

Geospatial Resources

The International Seabed Authority accounts for 1 full time geospatial expert, 2 expert using geospatial technology (professional and general staff) and 2 experts supporting the deployment of geospatial technology (consultant and general staff).

Geospatial Representatives

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Relevant links

- https://www.isa.org.jm/
- https://data.isa.org.jm/

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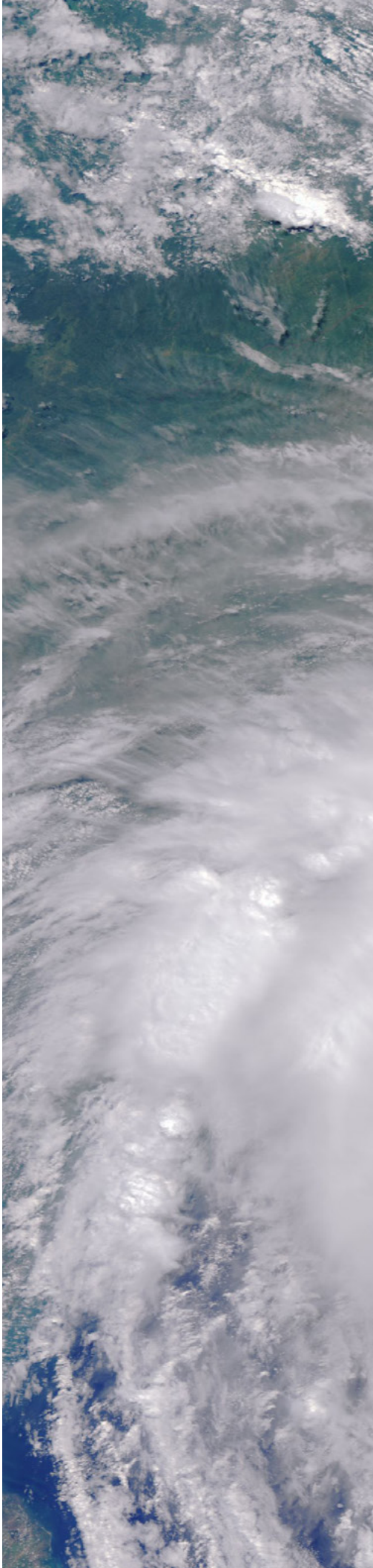

This image shows Cyclone Idai, captured by the Copernicus Sentinel-3 mission, on 13 March 2019 west of Madagascar and heading for Mozambique. Here, the width of the storm is around 800–1000 km, but does not include the whole extent of Idai. The storm went on to cause widespread destruction in Mozambique, Malawi and Zimbabwe. With thousands of people losing their lives, and houses, roads and croplands submerged, the International Charter Space and Major Disasters and the Copernicus Emergency Mapping Service were triggered to supply maps of flooded areas based on satellite data to help emergency response efforts.

Credits: Copernicus Sentinel (2019), processed by European Space Agency


UN GEOSPATIAL NETWORK
UNITED NATIONS COMMITTEE OF EXPERTS ON
GLOBAL GEOSPATIAL INFORMATION MANAGEMENT

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